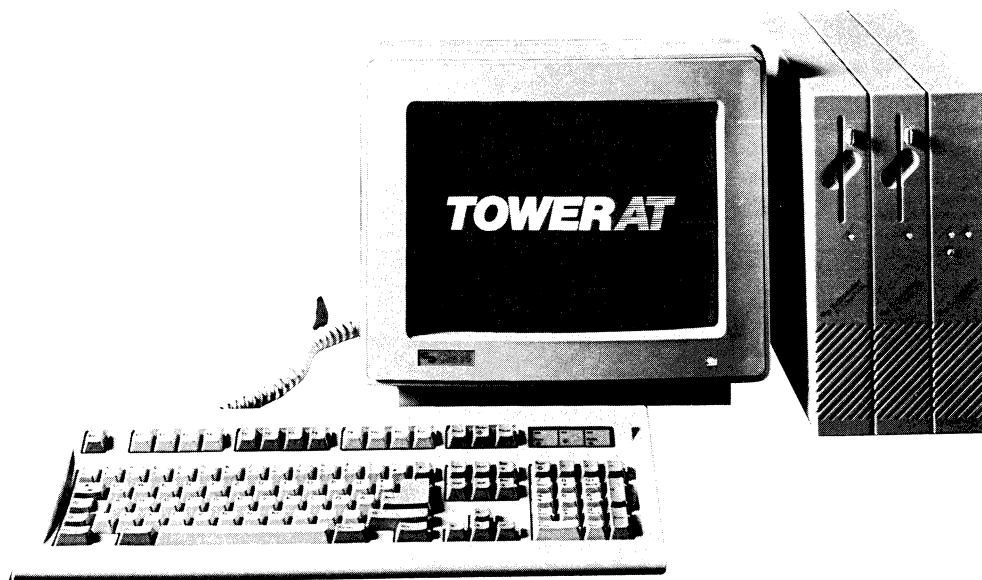


# Kundendienst-Handbuch Service Manual

## PERSONAL COMPUTER Tower AT 201/202/220

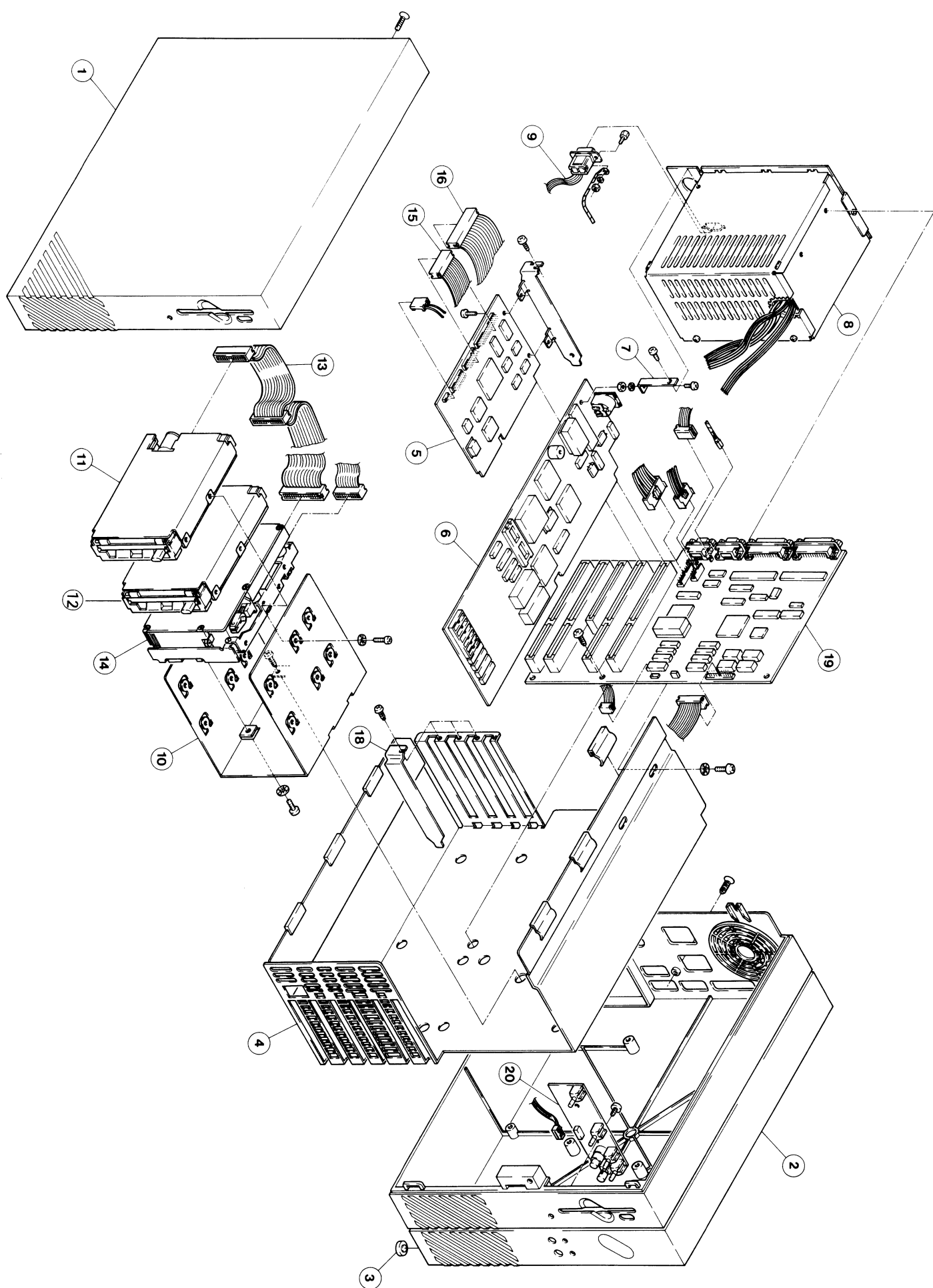


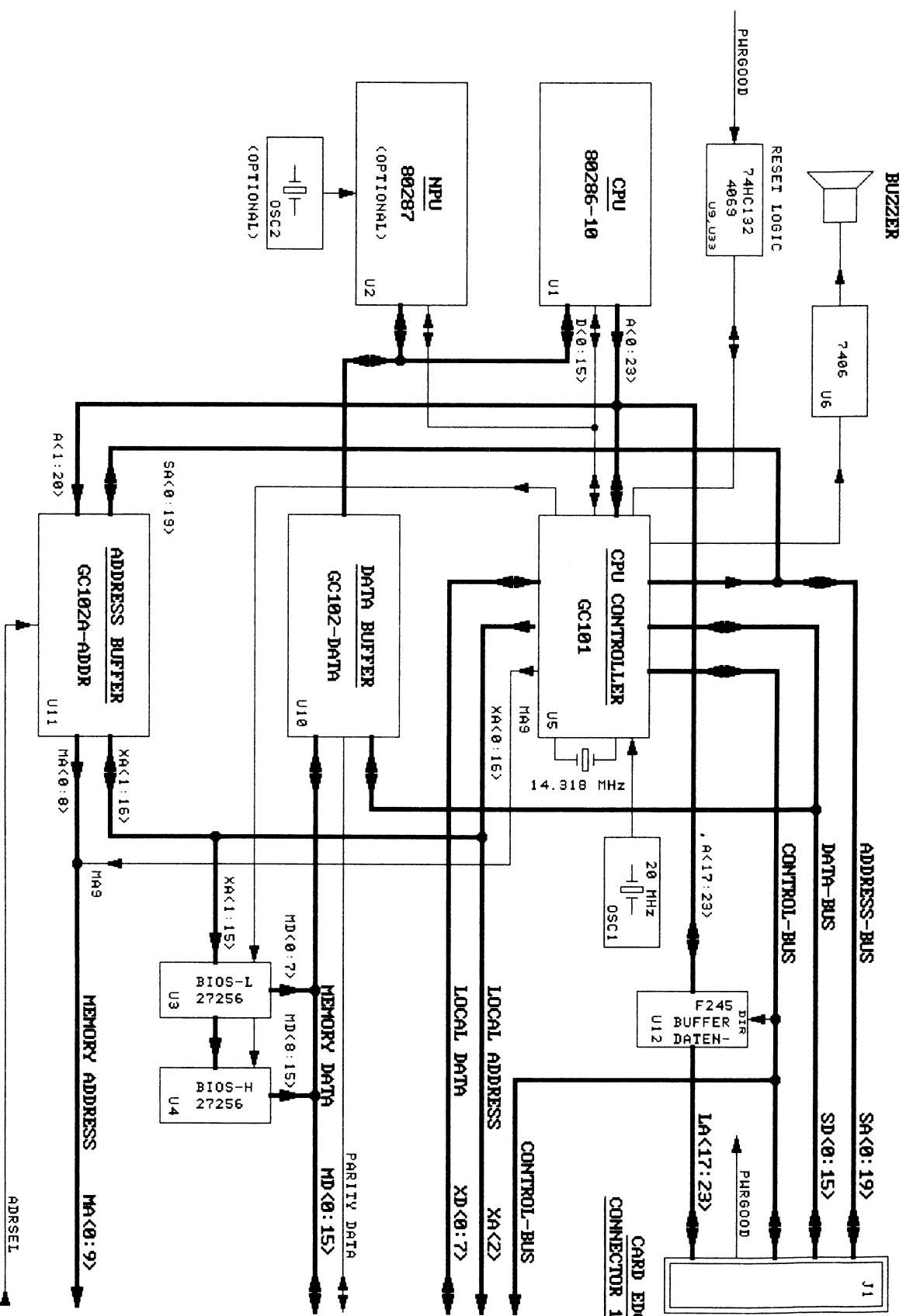
Ersatzteilliste für Tower AT 201/202/220  
Parts List for Tower AT 201/202/220

Bestell-Nr. Part.-No.	Bezeichnung	Description	Zeich.-Pos. Ref.-No.	Preisgruppe
50 467 00	FK System Tower	Box system tower		C 3
50 466 00	Sty-Verp. System Tower	Polyfoam system tower		C 3
50 495 00	FK Tastatur Tower	Box keyboard tower		C 2
50 496 00	Sty-Verp. Tastatur Tower	Polyfoam keyboard tower		C 2
50 481 00	Tastatur (D)	Keyboard (D)		F 6
50 482 00	Tastatur (F)	Keyboard (F)		F 6
50 202 00	Tastatur (DK)	Keyboard (DK)		F 6
50 203 00	Tastatur (I)	Keyboard (I)		F 6
50 204 00	Tastatur (N)	Keyboard (N)		F 6
50 485 00	Tastatur (S/SF)	Keyboard (S/SF)		F 6
50 206 00	Tastatur (P)	Keyboard (P)		F 6
50 214 00	Tastatur (GR)	Keyboard (GR)		F 6
50 484 00	Tastatur (GB)	Keyboard (GB)		F 6
50 483 00	Tastatur (E)	Keyboard (E)		F 6
50 486 00	Tastatur (CH)	Keyboard (CH)		F 6
50 097 00	Netzkabel (D)	Cord AC (D)		C 0
50 562 00	Netzkabel (GB)	Cord AC (GB)		C 0
50 617 00	Netzkabel (CH)	Cord AC (CH)		C 0
50 225 00	Gehäuse Oberteil Tower	Cabinet top	1	C 3
50 226 00	Gehäuse Unterteil Tower	Cabinet bottom	2	C 9
50 493 00	Gehäusefuß	Leg	3	A 5
50 172 00	Blechchassis Tower	Chassis metal	4	D 4
50 450 00	HD Controller 220 MFM	HD Controller 220 MFM	5	G 1
50 229 00	Platine Best. (D) Tower AT CPU	PCB (D) tower AT CPU	6	*
50 293 00	Haltewinkel CPU Leiterplatte	Angle CPU	7	A 9
50 215 00	Netzteil Tower 90W	Power supply tower 90W	8	G 8
50 448 00	Kabelbaum 9pol.	Cable 9-pol.	9	B 8
50 171 00	Floppyhalter	Bracket floppy	10	B 8
50 472 00	Floppy Laufwerk	Floppy disk drive	11, 12	G 7
50 221 00	Kabelbaum Floppy 26pol.	Cable floppy 26-pol.	13	B 7
50 473 00	Hard Disk Laufwerk	Hard disc drive	14	J 9
50 220 00	Kabelbaum 20pol.	Cable 20-pol.	15	B 9
50 223 00	Kabelbaum 34pol.	Cable 34-pol.	16	C 5
50 224 00	Blindblende	Plate blind	17	A 9
50 020 00	Blindblech	Plate blind	18	B 9
50 228 00	Platine Best. (D) Tower EGA I/O	PCB (D) tower EGA I/O	19	J 1

\*Preis auf Anfrage

Exploded view





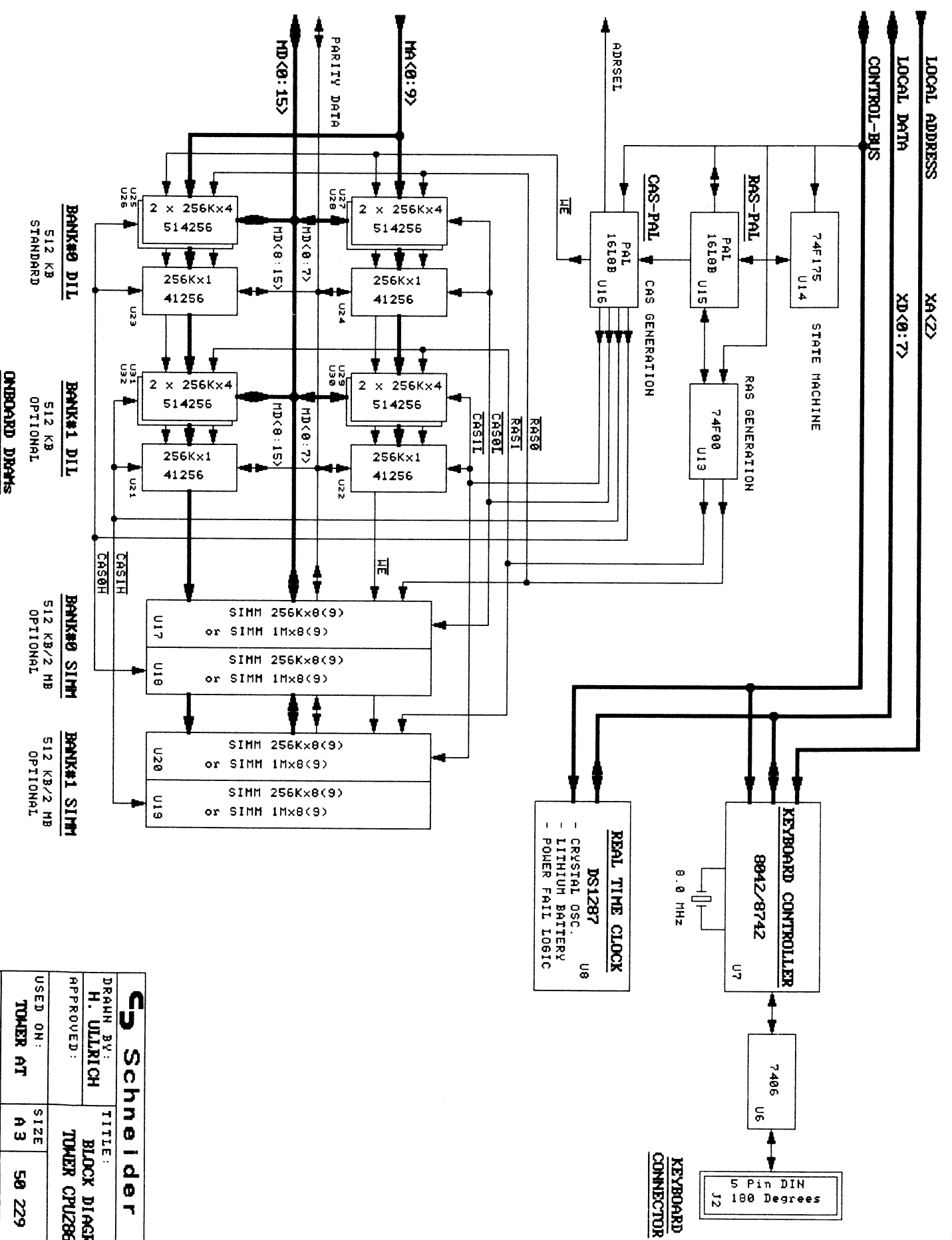
**Schneider**

DRAWN BY: H. ULLRICH  
 APPROVED: TOWER CPU286 PCB

USED ON: TOWER AT  
 SIZE: A3  
 REV: 1

DATE: 10-05-88  
 SHEET: 1 of 2





**Schneider**

DRAWN BY: H. ULLRICH  
APPROVED: [Signature]  
TUMER AT

TITLE: BLOCK DIAGRAM  
TUMER CPU286 PCB

USED ON: [Blank]  
TUMER AT

DATE: 10-05-88  
SHEET: 2 of 2

TOM-BLK2

A

B

C

D

8

7

6

5

4

3

2

1

8

7

6

5

4

3

2

1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	05-13-88	SCHLAGE
2		05-18-88	ASSMANN
3		06-01-88	SCHLAGE
4	First Layout	06-22-88	SCHLAGE
5	Layout REV 2	08-06-88	ASSMANN
6	Layout REV 2 CORRECTIONS	08-22-88	ASSMANN
7	PCB REV 2A FIX OF BUS 'MASTER'	08-31-88	ASSMANN
8	PCB REV 4. LAYOUT: ADDITIONAL RESET LOGIC ELIMINATED	10-27-88	ULLRICH

DRAWING FILES:	CONTENTS:
TDM_81.DWG	THIS SHEET
TDM_82.DWG	CPU SECTION
TDM_83.DWG	BIOS EPROMS
TDM_84.DWG	GC101
TDM_85.DWG	KEYBOARD / CLOCKS
TDM_86.DWG	REAL TIME CLOCK
TDM_87.DWG	ADDRESS / DATA BUFFERS
TDM_88.DWG	TIMING FOR MEMORY
TDM_89.DWG	MEMORY ON SIL- MODULE
TDM_810.DWG	MEMORY ON BOARD
TDM_811.DWG	CONNECTORS
TDM_812.DWG	BLOCK CAPS

**Schneider**

DRAWN BY:  
H. ULLRICH

APPROVED:

TITLE:  
SCHEMATICS  
Tower-- CPU286

USED ON:

Tower--AT

SIZE  
A 3

50 229

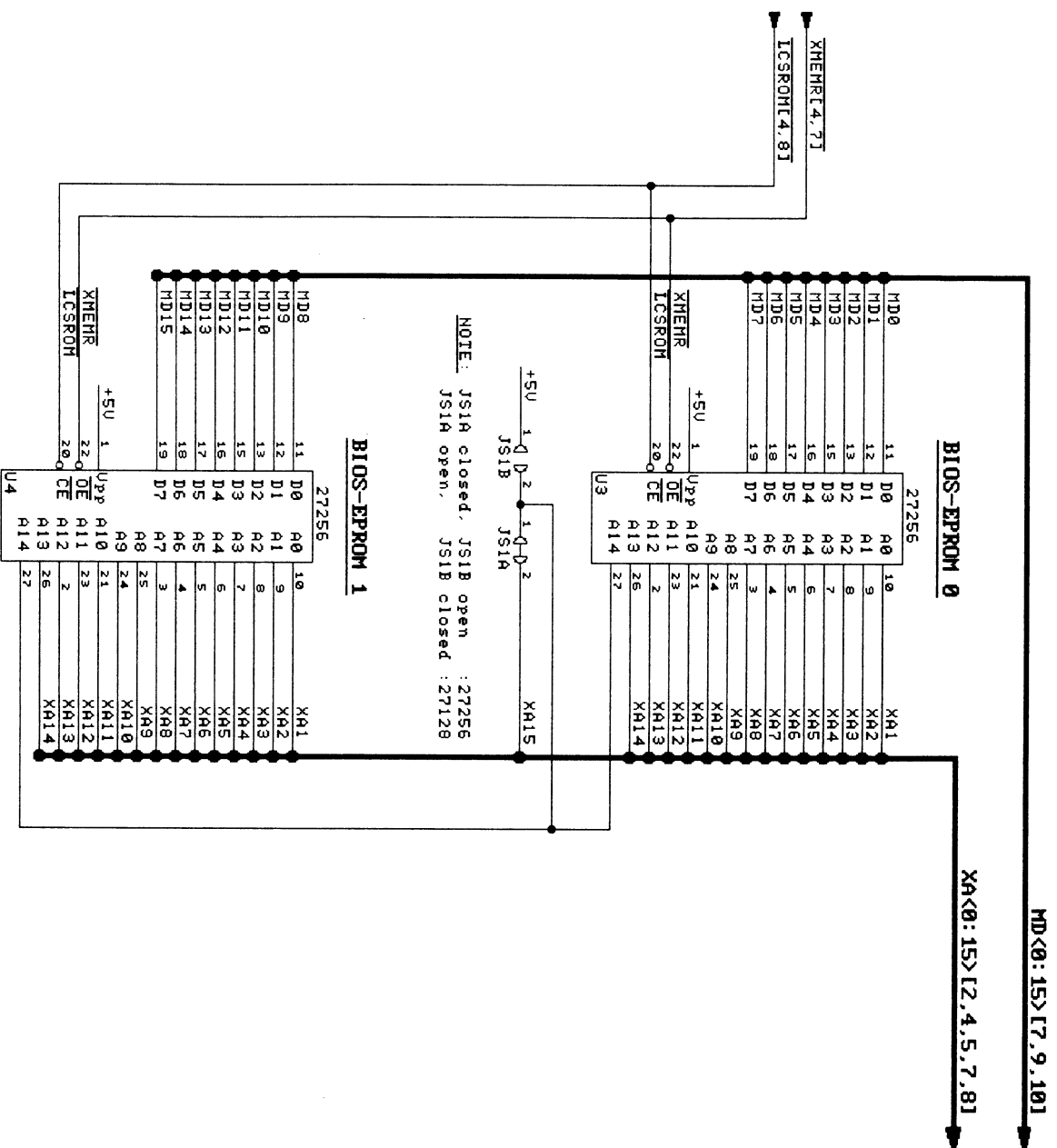
REV  
8

DATE: 11-02-88

SHEET: 1 of 12

TDM\_81





**Schneider**

DRAWN BY:  
B. ASSMANN

APPROVED:

TITLE:  
SCHEMATIC  
Tower-- CPU286

USED ON:

Tower--AT

SIZE  
A3

50 229

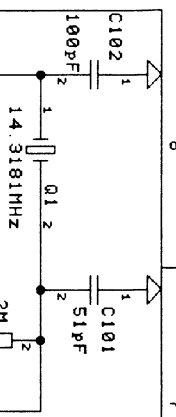
REV  
8

DATE: 11-02-88

SHEET: 3 of 12

TOM-83

XA<0:16>[2,3,5,7,8]  
CPU-ADDR<0:23>[2,7]



55	XA0	78	A0	104	A17
56	XA1	79	A1	105	A18
57	XA2	106	A19	107	A20
58	XA3	108	A21	109	A22
59	XA4	110	A23		
60	XA5				
61	XA6				
62	XA7				
63	XA8				
64	XA9				
65	XA10				
66	XA11				
67	XA12				
68	XA13				
69	XA14				
70	XA15				
71	XA16				
72	XA17				
73	XA18				
74	XA19				
75	XA20				
76	XA21				
77	XA22				
78	XA23				

138	CS042[5]	137	DMACEN[7]
139	RC[5]	138	CPUHLDA[2,7,8]
140	OBFULL[5]	139	S0[2,8]
141	HISPEED[5]	140	S1[2,8]
142		141	M-10[2]
143		142	
144		143	
145		144	
146		145	
147		146	
148		147	
149		148	
150		149	

# GC101-160 P-FP

US

VSS = 19, 20, 42, 59, 60  
100, 101, 140, 141  
VDD = 40, 80, 120, 160

99	XMEMR[3,7,8]	142	T/C	XMEMR/MA9
98	XIOM[2,5]	143	TOCHCK	XIOM
103	XIOM[2,5]	144	TOCHRDY	XIOM
102	XIOM[2,5]	145	BALE[11]	XIOM
77	XBALE[8]	85	ZEROMS[8,11]	XBALE
72	XBALE[8]	88	MEMS1[6,11]	XBALE
28	MEMR[8,11]	14	TOCS1[6,11]	MEMR
29	MEMR[8,11]	13		MEMR
142	TC[11]			
143	TOCHK[11]			
144	TOCHRDY[11]			
145	BALE[11]			
85	ZEROMS[8,11]			
88	MEMS1[6,11]			
14	TOCS1[6,11]			
13				
3		152	IR03	IR03
4		158	IR04	IR04
158		159	IR05	IR05
5		1	IR06	IR06
6		2	IR07	IR07
7		4	IR09	IR09
10		5	IR010	IR010
11		6	IR011	IR011
12		7	IR012	IR012
14		8	IR014	IR014
15		9	IR015	IR015

NOTE:

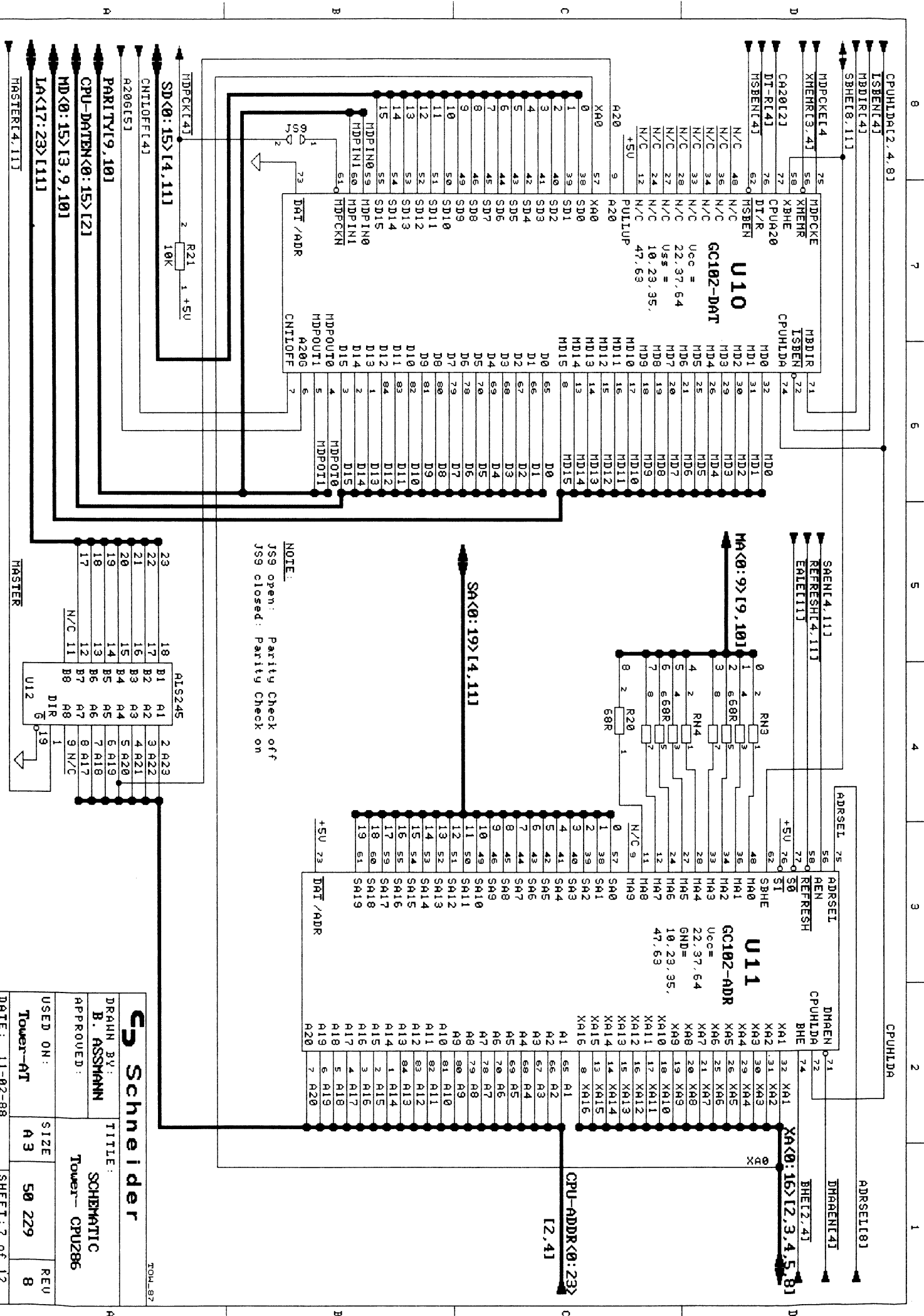
R4 assembled with GC010A-160 only

MA[8:9]>[7,9,10]

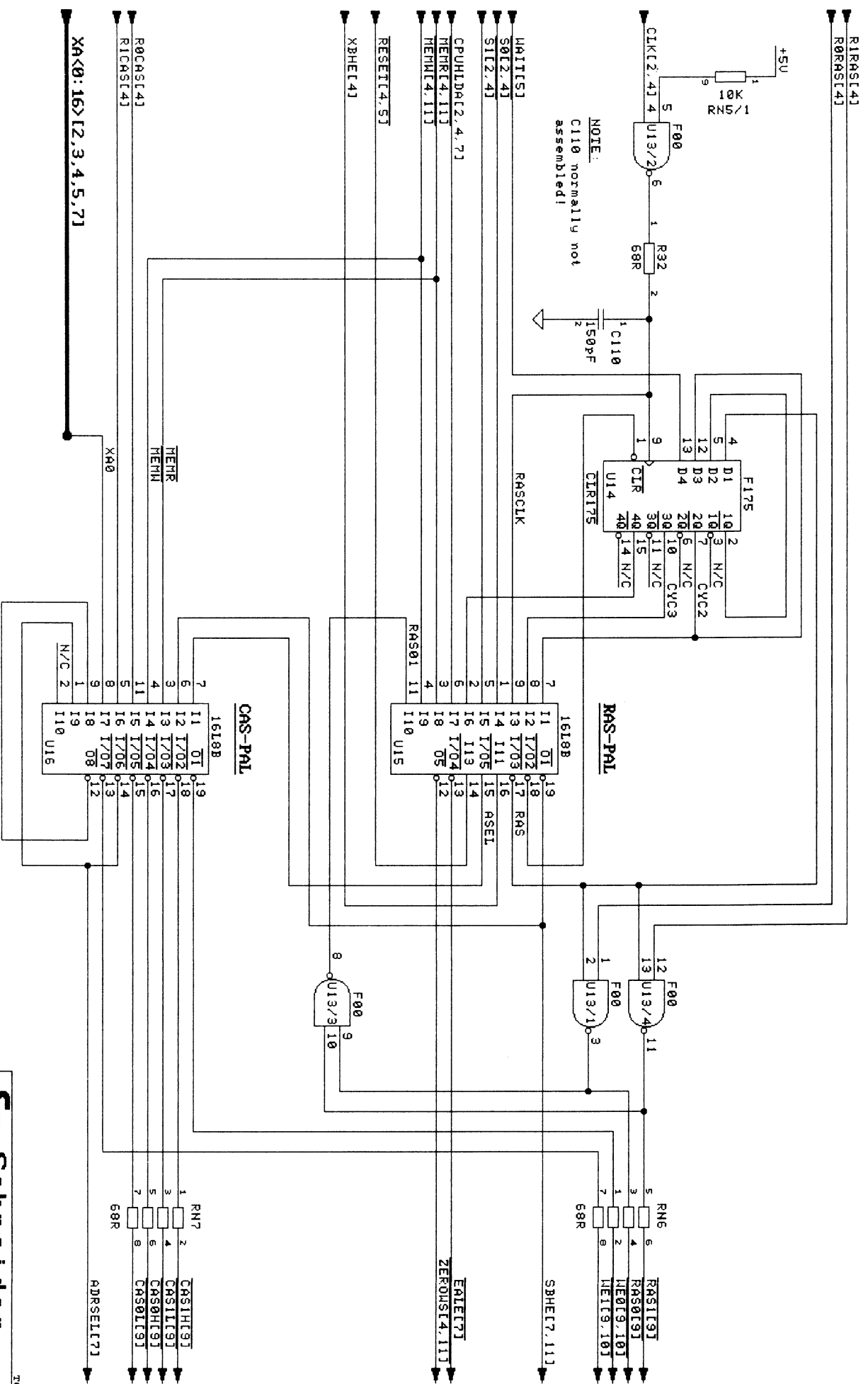
IR0[3:15]>[11]











**Schneider**

DRAWN BY: **B. ASSMANN**

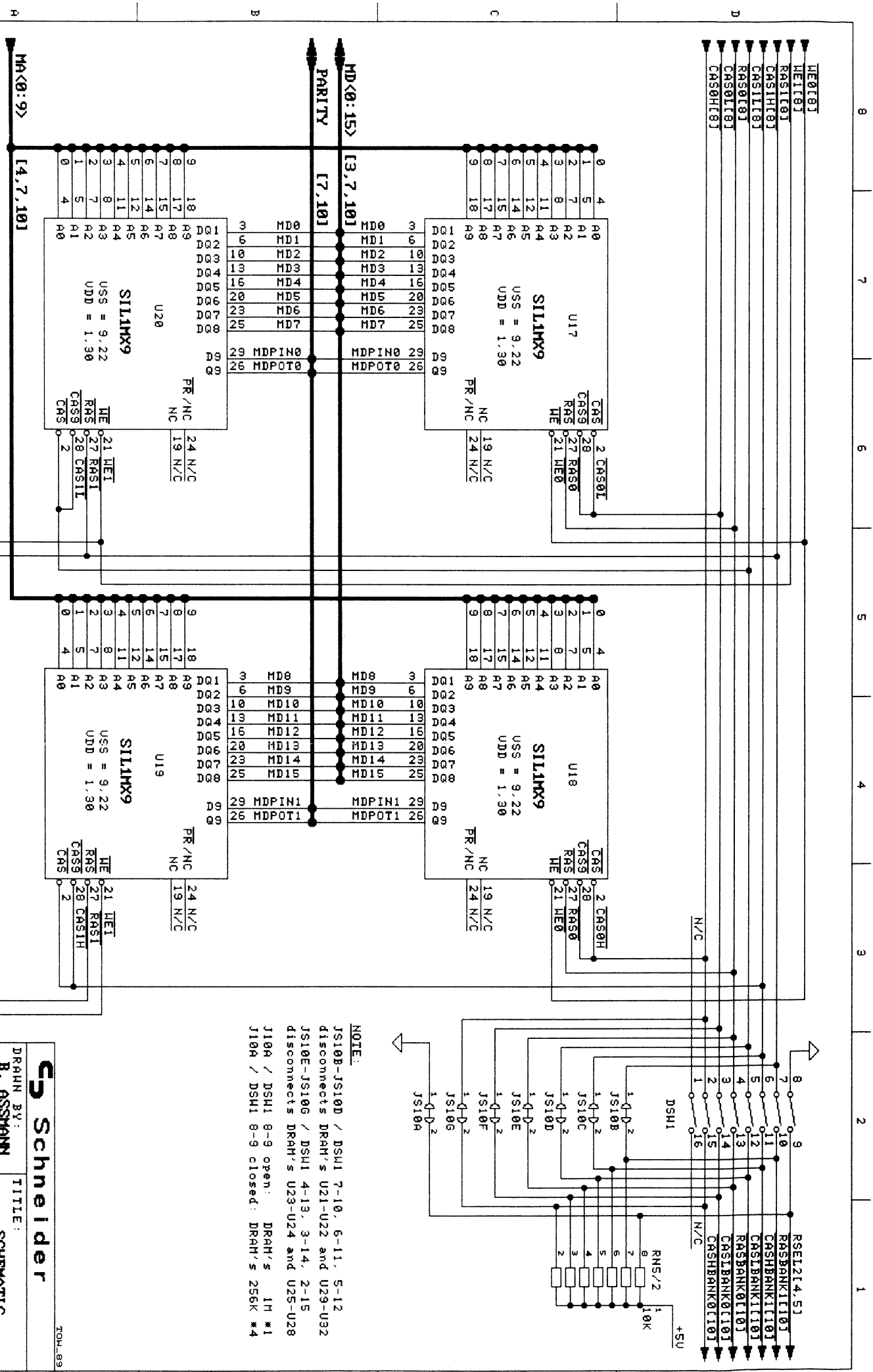
APPROVED: **TOMER CPU 80286**

USED ON: **TOMER-AT**

DATE: 11-02-88

SHEET: 8 of 12

TOM-88



**NOTE:**  
 JS10B-JS10D / DSU1 7-10, 6-11, 5-12  
 disconnects DRAM's U21-U22 and U23-U32  
 JS10E-JS10G / DSU1 4-13, 3-14, 2-15  
 disconnects DRAM's U23-U24 and U25-U28  
 J10A / DSU1 8-9 open: DRAM's 1M \*1  
 J10A / DSU1 8-9 closed: DRAM's 256K \*4

**Schneider**

DRAMA BY:  
 B. ASSMANN

APPROVED:

TITLE:  
 SCHEMATIC  
 Tower- CPU286

USED ON:

SIZE  
 A3

REV  
 8

Tower-AT

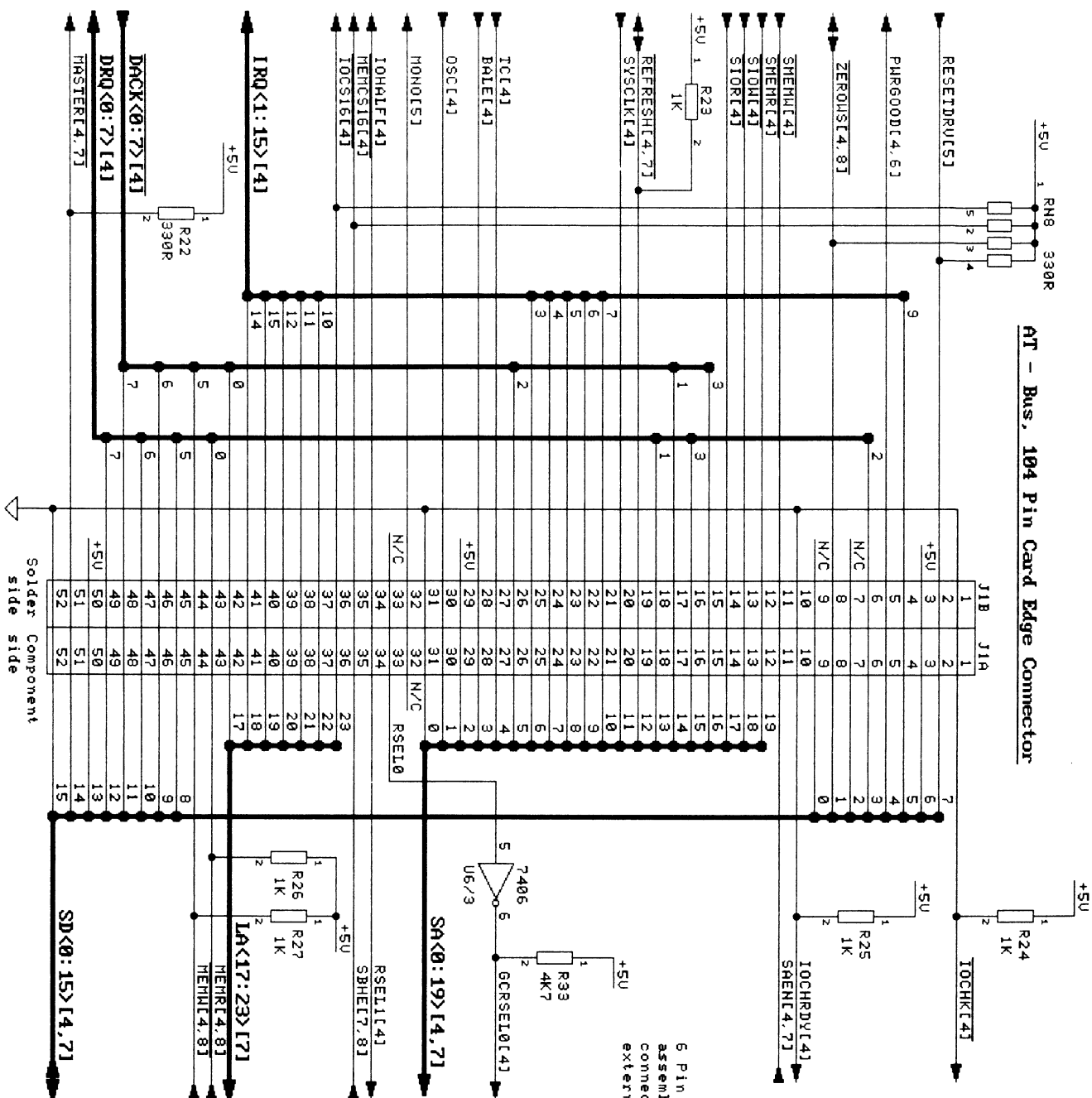
50 229

DATE: 11-02-88

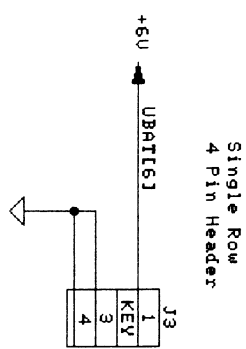
SHEET: 9 of 12



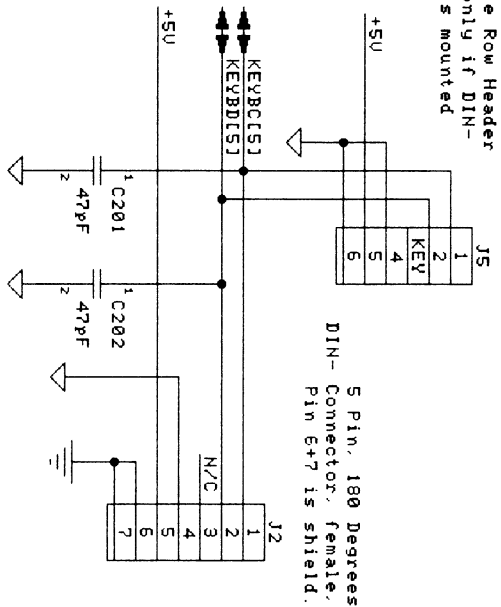
### AT - Bus, 104 Pin Card Edge Connector



### Battery- Connector +6V



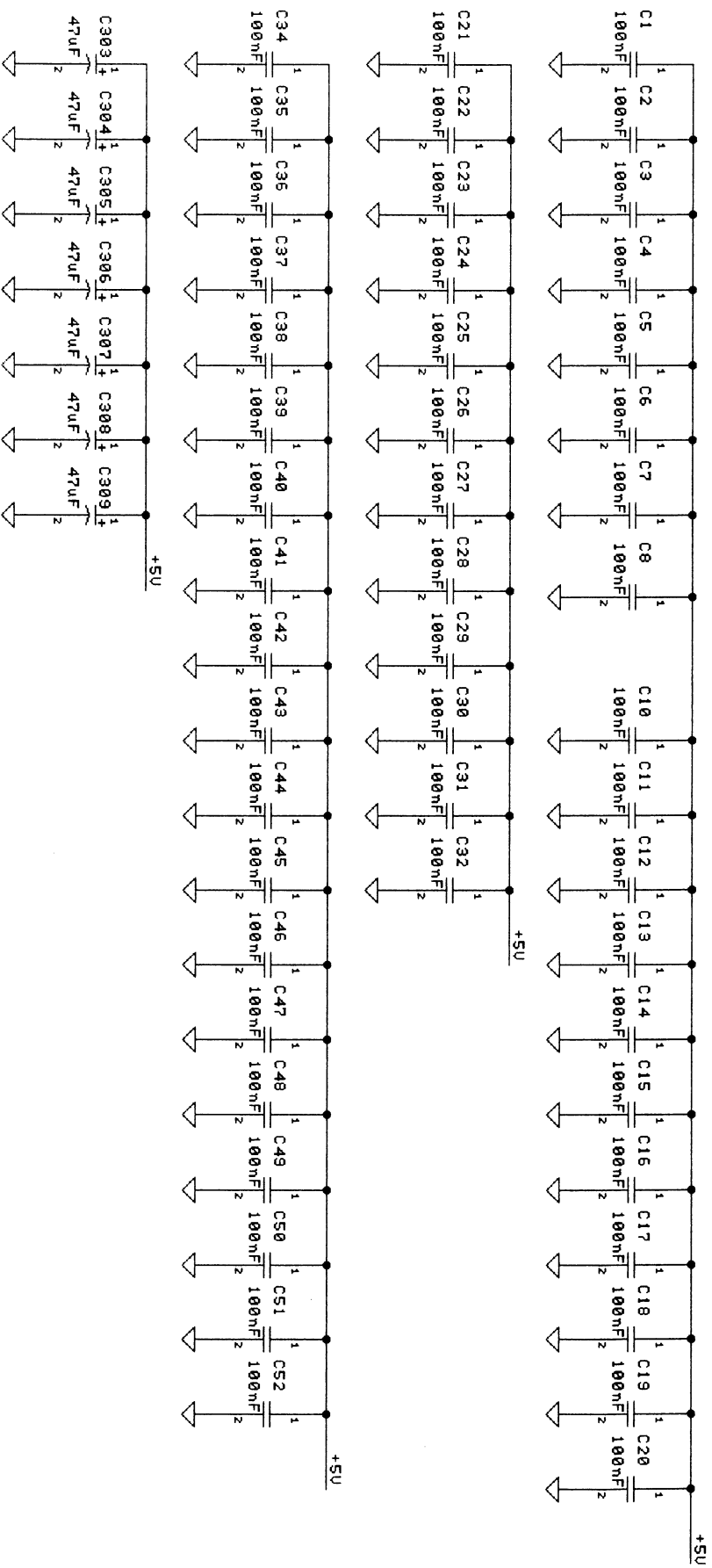
### Keyboard- Connector



**Schneider**

DRAWN BY: H. ULRICH  
APPROVED: Tower-AT  
TITLE: SCHNEIDER  
Tower- CPU286

USED ON: Tower-AT  
SIZE: A3  
50 229  
REV: 8  
DATE: 11-02-88  
SHEET: 11 of 12



**Schneider**

DRAWN BY:  
**B. ASSMANN**

APPROVED:

TITLE:  
**SCHEMATIC  
Tower- CPU286**

USED ON:

**Tower-AT**

SIZE

**A3**

50 229

**8**

REV

**8**

DATE: 11-02-88

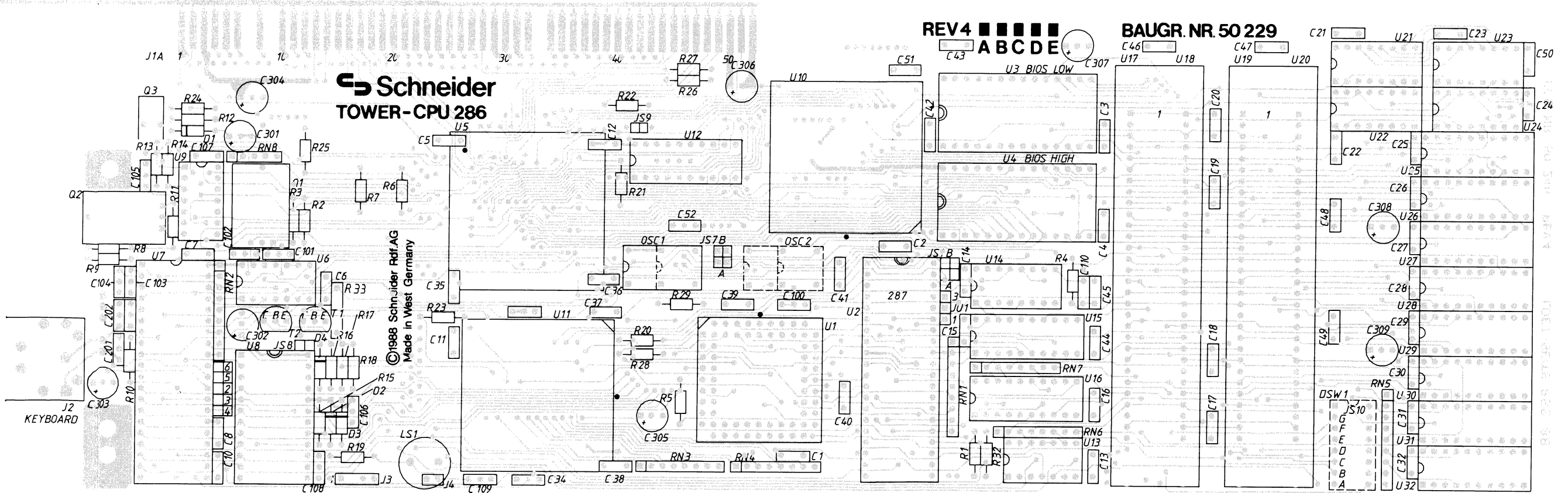
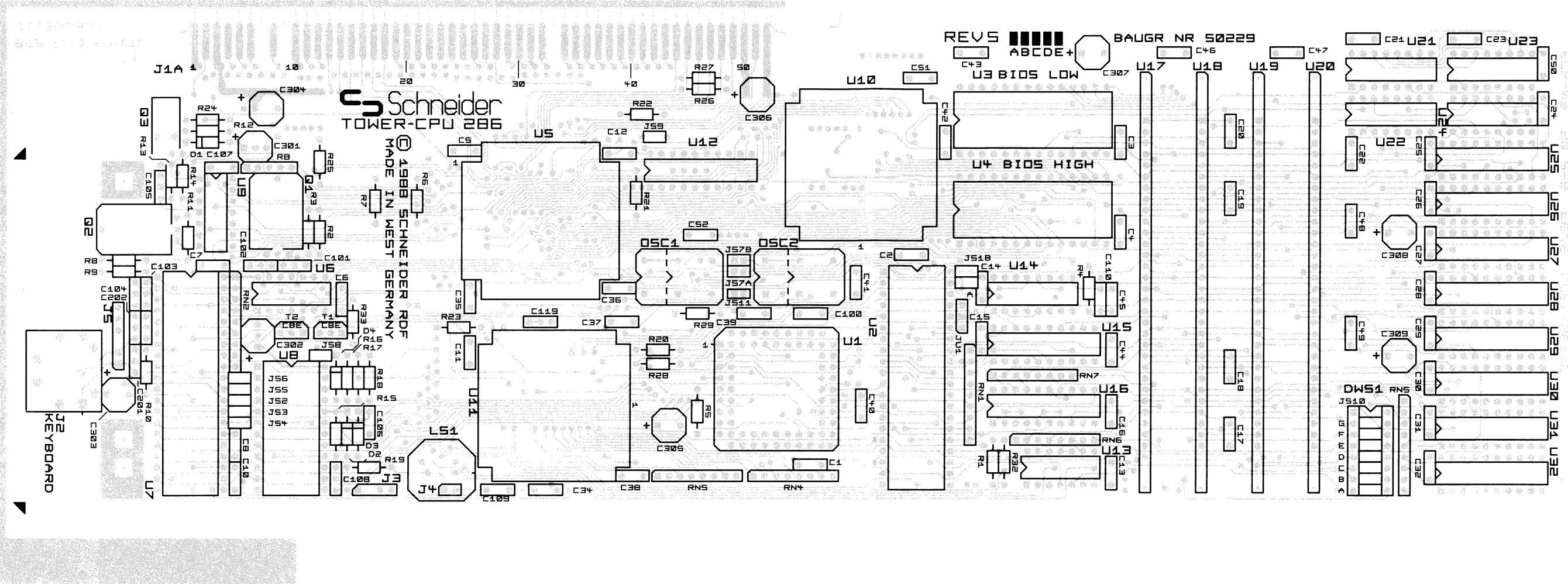
SHEET: 12 of 12

TOM-812

Ersatzteilliste für Platine Best. (D) Tower AT CPU  
Parts List PCB (D) Tower AT CPU

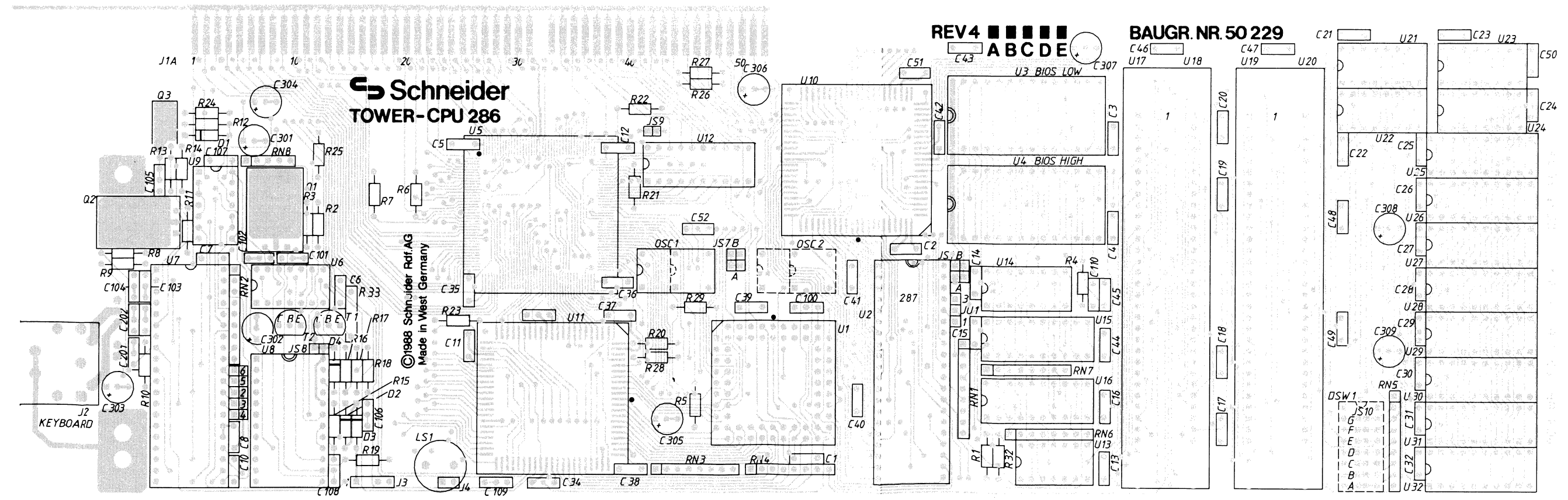
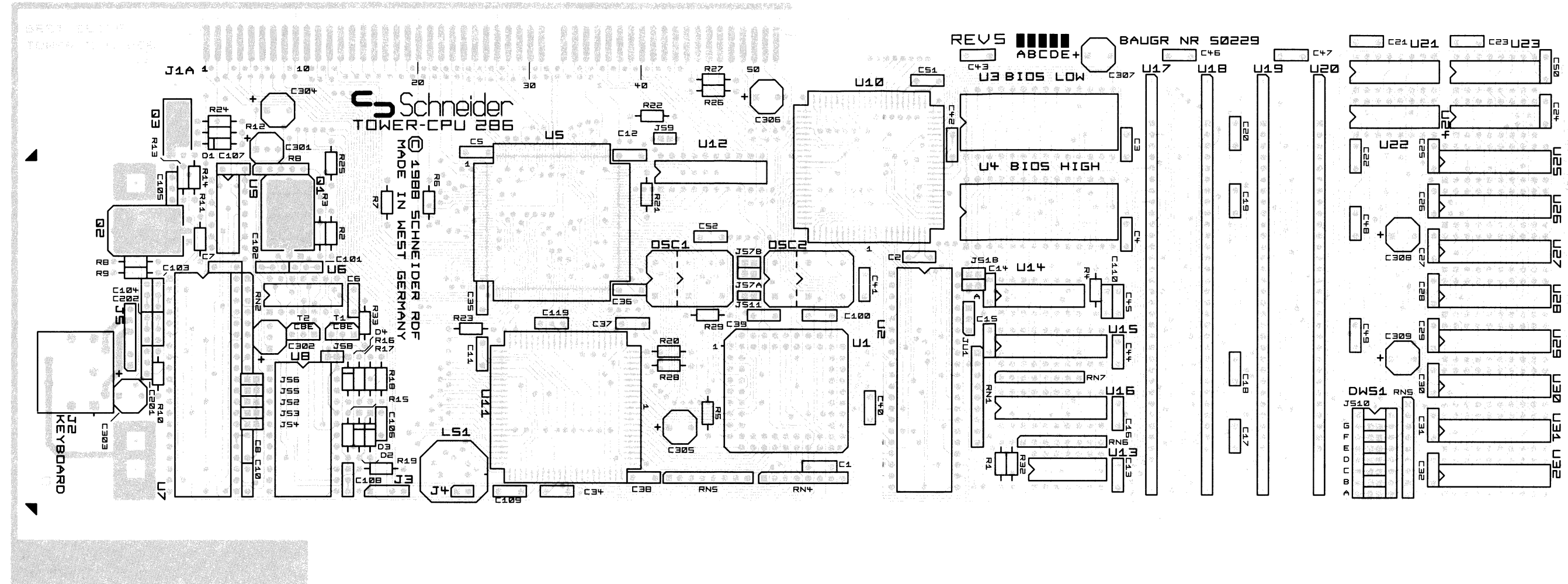
Bestell-Nr. Part.-No.	Bezeichnung	Description	Zeich.-Pos. Ref.-No.	Preisgruppe
50 115 00	IC 80286	IC 80286	U 1	F 4
50 444 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 3	C 9
50 445 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 4	C 9
50 047 00	IC GC 101C CPU Contr. (Rev. 4)	IC GC 101C CPU Contr. (Rev. 4)	U 5	F 5
50 776 00	IC GC 101D CPU Contr. (Rev. 5)	IC GC 101D CPU Contr. (Rev. 5)	U 5	F 5
50 122 00	IC 7406	IC 7406	U 6	A 7
50 243 00	IC 8042 prog.	IC 8042 prog.	U 7	C 3
50 177 00	IC DS 1287	IC DS 1287	U 8	D 4
50 323 00	IC MC 14069	IC MC 14069	U 9	A 3
50 045 00	IC GC 102 Data	IC GC 102 Data	U 10	D 7
50 046 00	IC GC 102A Address	IC GC 102A Address	U 11	D 7
50 249 00	IC 74 ALS 245	IC 74 ALS 245	U 12	B 1
50 123 00	IC 74 F 00	IC 74 F 00	U 13	A 3
50 242 00	IC 74 F 175	IC 74 F 175	U 14	A 8
50 334 00	IC PAL 16L8BCN RAS-PAL	IC PAL 16L8BCN RAS-PAL	U 15	B 8
50 333 00	IC PAL 16L8BCN CAS-PAL	IC PAL 16L8BCN CAS-PAL	U 16	B 8
50 160 00	IC DRAM 256x4	IC DRAM 256x4	U 25-28	F 4
50 379 00	IC 74 HC 132	IC 74 HC 132	U 33	A 5
50 338 00	Diode 1 N 4148	Diode 1 N 4148	D 1,5	A 0
50 325 00	Quarz 14,31818 MHz	Quarz 14.31818 MHz	Q 1	B 3
50 326 00	Quarz 8,0 MHz	Quarz 8.0 MHz	Q 2	B 0
50 327 00	Osz. 20,0 MHz	Osc. 20.0 MHz	OSC 1	C 0
50 345 00	Elko rad. 47µF/16V	CE 47µF/16V	C 303-309	A 2
50 344 00	Tantal 10µF/16V	CE 10µF/16V	C 301	A 4
50 381 00	Tantal 1µF/16V	CE 1µF/16V	C 310	A 3
50 316 00	R-Netzwerk 8x10K	Network 8x10K	RN 1,5	A 3
50 319 00	R-Netzwerk 8x4K7	Network 8x4K7	RN 2	A 3
50 382 00	R-Netzwerk 4x68R	Network 4x68R	RN 3, 4, 6, 7	A 2
50 331 00	R-Netzwerk 4x330R	Network 4x330R	RN 8	A 2
50 332 00	Summer	Buzzer	LS 1	A 8
50 181 00	Buchse Dioden 5 Pin	Socket Diode 5 Pin	J 2	A 5

CPU  
Soldering side



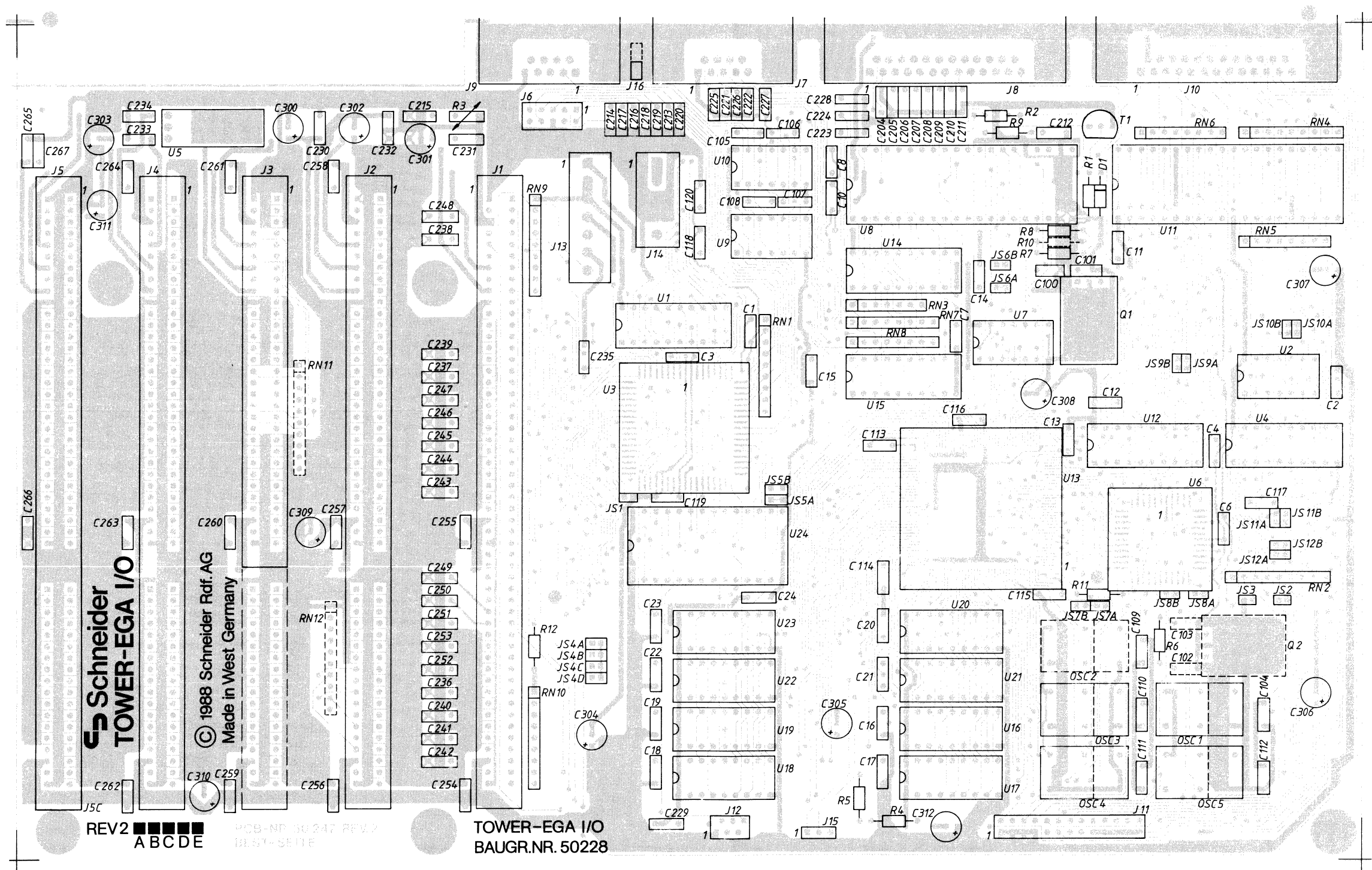


CPU  
Component side

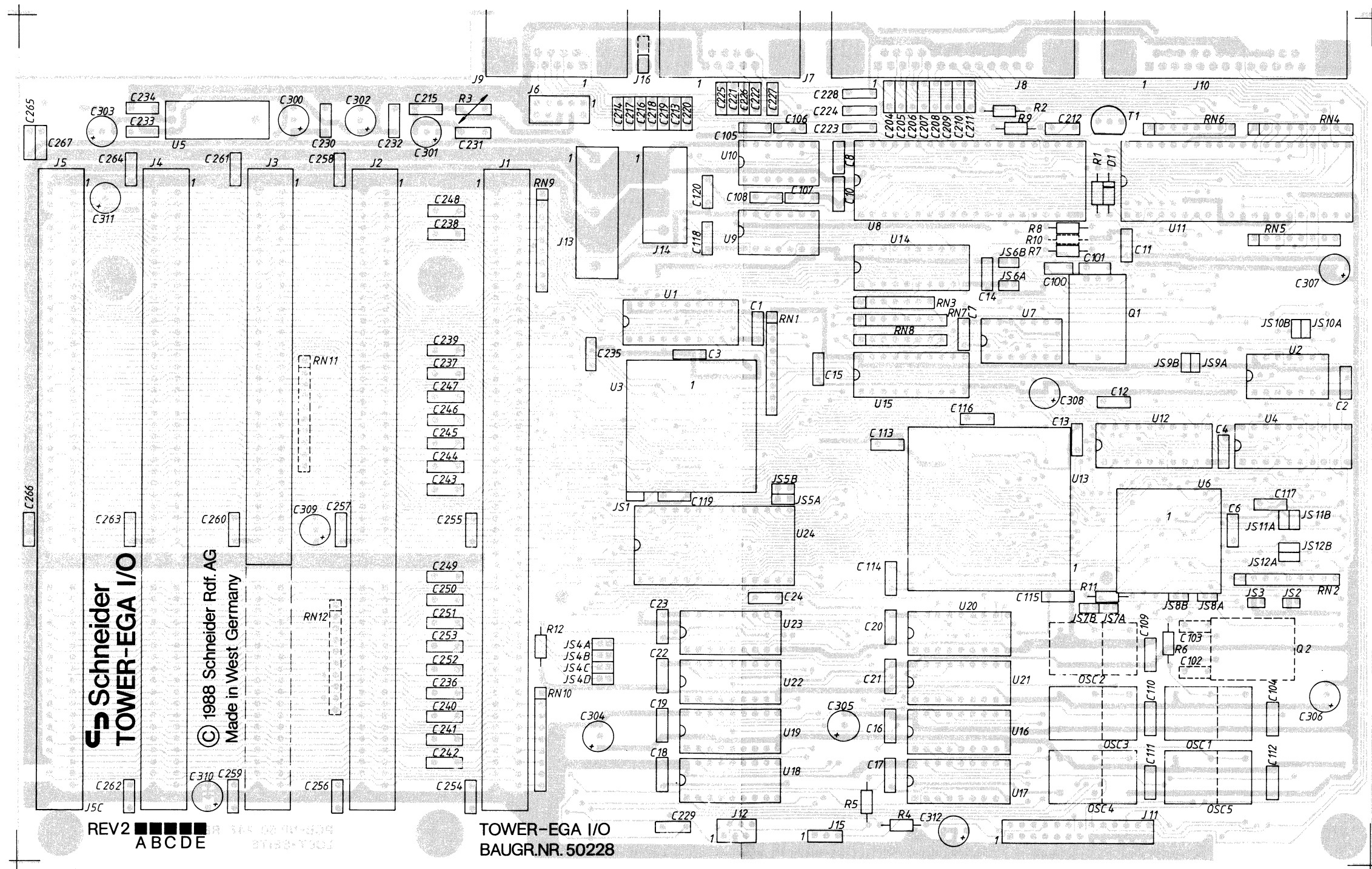




EGA I/O  
Component side

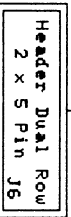
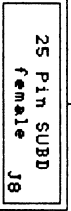
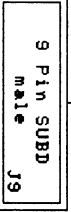
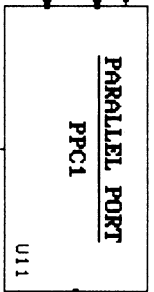
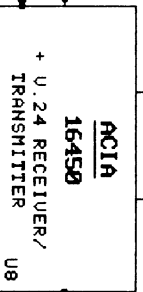
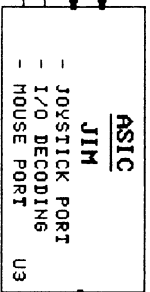
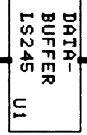
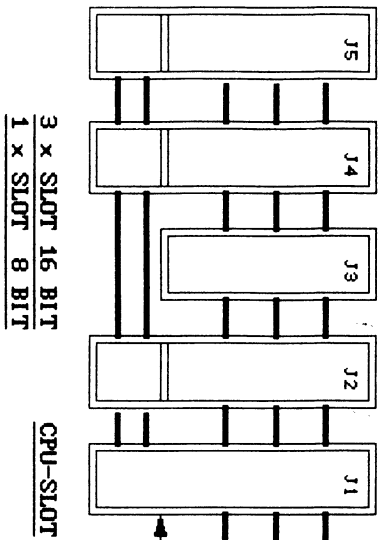


### Soldering side



Ersatzteilliste für Platine Best. (D) Tower EGA I/O  
Parts List P.C.B (D) Tower EGA I/O

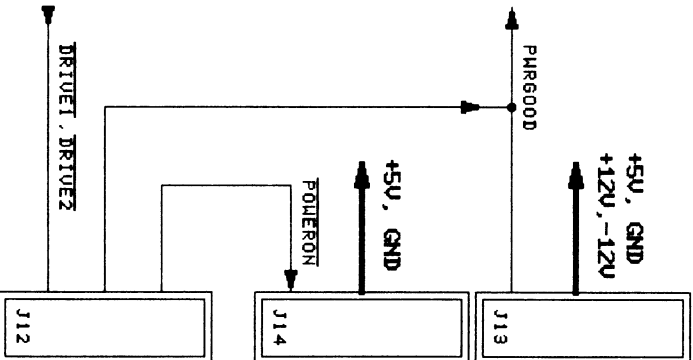
Bestell-Nr. Part.-No.	Bezeichnung	Description	Zeich.-Pos. Ref.-No.	Preisgruppe
50 129 00	IC 74LS245	IC 74LS245	U 1	A 7
50 237 00	IC 7407	IC 7407	U 2	A 8
50 101 00	IC JIM TC17 GO 22AT	IC JIM TC17 GO 22AT	U 3	C 7
50 311 00	IC PAL 16 L8A Peog.	IC PAL 16 L8A Prog.	U 4	B 4
50 238 00	IC 7905 (TO220)	IC 7905 (TO220)	U 5	A 6
50 105 00	IC WD 37 C65A-JM00	IC WD 37 C65A-JM00	U 6	D 5
50 240 00	IC 74 F 126	IC 74 F 126	U 7	A 9
50 169 00	IC 16 C 450 PC	IC 16 C 450 PC	U 8	C 9
50 120 00	IC MC 1488	IC MC 1488	U 9	A 4
50 121 00	IC MC 1489	IC MC 1489	U 10	A 4
50 106 00	IC PPC 1	IC PPC 1	U 11	C 2
50 239 00	IC 74 LS 237	IC 74 LS 237	U 12	A 6
50 147 00	IC GC-201	IC GC-201	U 13	F 2
50 125 00	IC 74 HC 373	IC 74 HC 373	U 14	A 8
50 241 00	IC 74 F 244	IC 74 F 244	U 15	B 0
50 110 00	IC DRAM 64Kx4 120ns	IC DRAM 64Kx4 120ns	U 16-23	D 4
50 447 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 24	C 9
50 338 00	Diode 1 N 4148	Diode 1 N 4148	D 1	A 0
50 358 00	Trans BC 337 B	Trans BC 337 B	T 1	A 2
50 312 00	Quarz 1,8432 MHz	Quarz 1.8432 MHz	Q 1	B 6
50 313 00	Osz. 16,0 MHz	Osc. 16.0 MHz	OSC 1	C 0
50 337 00	Osz. 34,0 MHz	Osc. 34.0 MHz	OSC 3	C 0
50 315 00	Osz. 24,0 MHz	Osc. 24.0 MHz	OSC 4	C 0
50 314 00	Osz. 19,2 MHz	Osc. 19.2MHz	OSC 5	C 0
50 365 00	Elko rad. 10µF/25V	CE 10µF/25V	C 300-303	A 2
50 345 00	Elko rad. 47µF/16V	CE 47µF/16V	C 304-312	A 2
50 316 00	R-Netzwerk 8x10K	R-Network 8x10K	RN 1	A 3
50 317 00	R-Netzwerk 8x1K	R-Network 8x1K	RN 2	A 3
50 320 00	R-Netzwerk 6x680K	R-Network 6x680K	RN 3	A 2
50 319 00	R-Netzwerk 8x4K7	R-Network 8x4K7	RN 4, 9, 10	A 3
50 318 00	R-Netzwerk 4x33R	R-Network 4x33R	RN 5-8	A 2
50 372 00	R-Netzwerk 9x10K	R-Network 9x10K	RN 11, 12	A 2
50 321 00	Widerstand PTC 0R75	Resistor PTC 0R75	R 3	B 0
50 178 00	Buchse Cardedge 104 Pin	Socket Cardedge 104 Pin	J 1	B 5
50 179 00	Buchse Cardedge 98 Pin	Socket Cardedge 98 Pin	J 2, 4, 5	B 3
50 180 00	Buchse Cardedge 62 Pin	Socket Cardedge 62 Pin	J 3	B 1
50 252 00	Stiftleiste RM 2,54 10pol.	Connector RM 2.54 10-pol.	J 6	A 2
50 132 00	Buchse SUB D 9 Pin	Socket SUB D 9 Pin	J 7	A 9
50 133 00	Buchse SUB D 25 Pin	Socket SUB D 25 Pin	J 8, 10	B 2
50 131 00	Buchse SUB D 9 Pin	Socket SUB D 9 Pin	J 9	A 9
50 139 00	Stiftleiste RM 2,54 26pol.	Connector RM 2.54 26-pol.	J 11	A 4



SERIAL PORT  
CONNECTOR

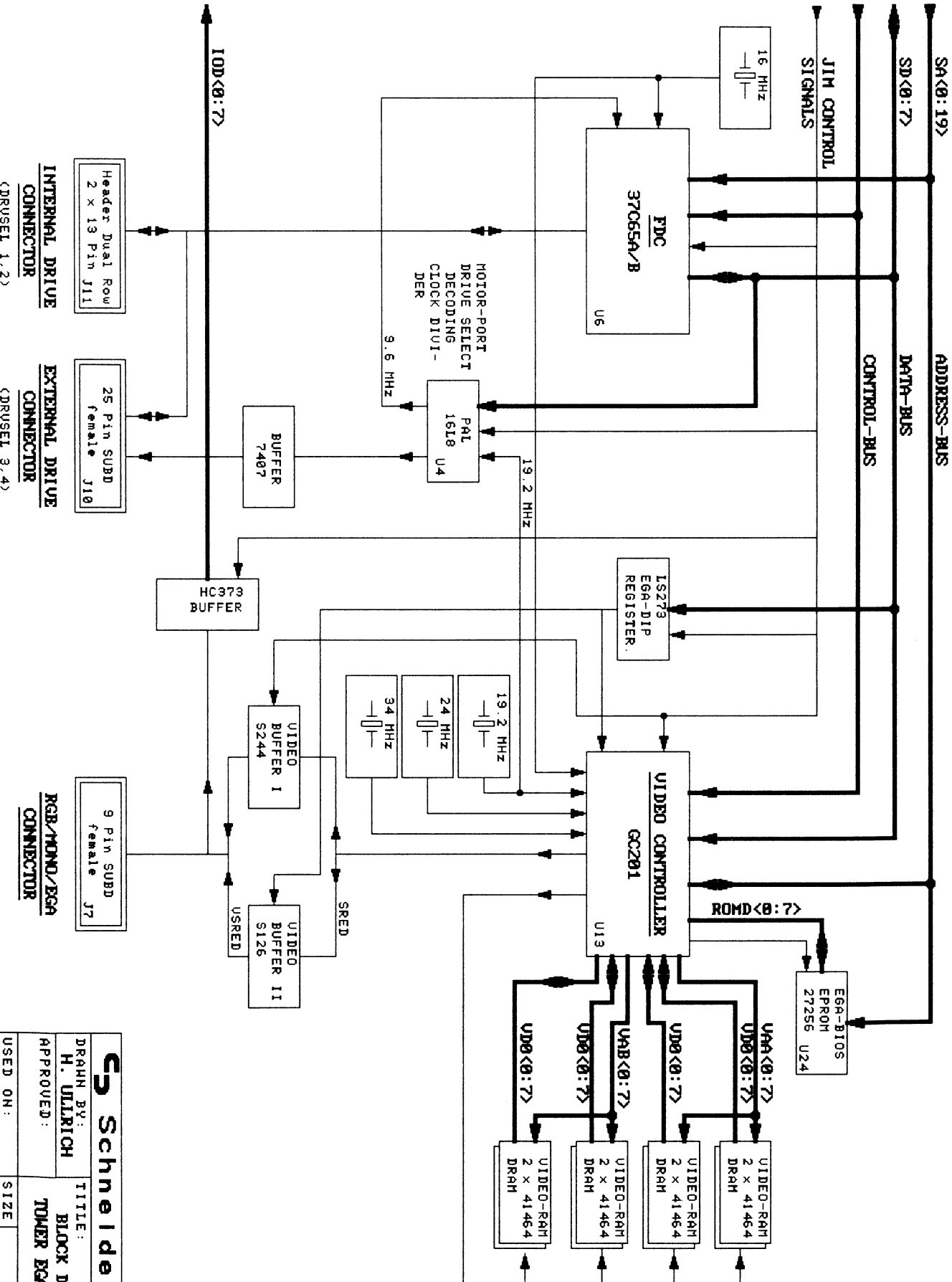
PARALLEL PORT  
CONNECTOR

INTERNAL MOUSE  
CONNECTOR



SA<0:19> ADDRESS-BUS  
SD<0:7> DATA-BUS  
CONTROL-BUS  
JIM CONTROL-SIGNALS  
I0D<0:7>  
I0D<0:7>

<b>Schneider</b> <small>710-BK41</small>			
DRAWN BY: H. ULLRICH	TITLE: BLOCK DIAGRAM TOWER EGA-I/O PCB		
APPROVED:			
USED ON: TOWER AT	SIZE A3	SQ 228	REV 2
DATE: 09-29-88	SHEET: 1 of 2		



**Schneider**

DRAWN BY:

H. ULRICH

APPROVED:

TOMER AT

DATE: 09-29-88

TITLE:

BLOCK DIAGRAM

TOMER 68A-1/0 PCB

SIZE

A 3

USED ON:

50 228

REV

2

TI0-BLK2

A

B

C

D

1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	04-27-88	RME
2	UPDATE	05-04-88	RME
3	UPDATE	05-24-88	RME
4	UPDATE, CORRECTIONS, ADDED BLOCK CAPS	06-22-88	H. ULLRICH
5	NEW LAYOUT (PCB REV.2)	07-11-88	RME
6	CHANGED 2 SIGNAL NAMES, ADDED PAGE REFERENCES	08-10-88	H. ULLRICH
7	CHANGED R8 VALUE TO 1K, ADDED C268 (C268 IS NOT INCLUDED IN THE LAYOUT OR SILKSCREEN BUT AN ADDON REMARK!)	09-15-88	H. ULLRICH
8	ADDED C121 (NOT INCLUDED IN LAYOUT OR SILKSCREEN - ADD-ON REMARK!) BUG FIX FOR UC-001 VIDEO CHIP	11-18-88	B. ASSMANN

DRAWING FILES:      CONTENTS:

TI0_81.DWG	THIS SHEET
TI0_82.DWG	ASIC JIM
TI0_83.DWG	FLOPPY INTERFACE
TI0_84.DWG	SERIAL INTERFACE
TI0_85.DWG	PARALLEL INTERFACE
TI0_86.DWG	VIDEO CONTROLLER
TI0_87.DWG	VIDEO RAM, CHAR. ROM
TI0_88.DWG	VIDEO INTERFACE
TI0_89.DWG	CONNECTORS I
TI0_810.DWG	CONNECTORS II
TI0_811.DWG	CPU SLOT
TI0_812.DWG	NORMAL SLOT
TI0_813.DWG	NORMAL SLOT
TI0_814.DWG	NORMAL SLOT
TI0_815.DWG	NORMAL SLOT
TI0_816.DWG	BLOCK CAPS, SPARE GATES

**Schneider**

TI0-81

DRAWN BY:  
B. ASSMANN

APPROVED:

TITLE:  
SCHEMATIC  
TOWER-BGA/10

USED ON:

TOWER-AT

SIZE

A3

50 228

8

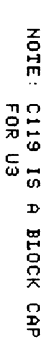
REV

8

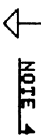
DATE: 11-18-88

SHEET: 1 of 16

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



2 3 4 5 6 7 8



```
JS2 OPEN : 125 ms
JS2 CLOSED: 187 ms
```

```

2) JS3 SELECTS 2 SPEED SPINDLE DRIVE IF CLOSED
3) J15 SELECTS RPM POLARITY

```

JUMPER IN POS. 1-2: 1.2MB OR AT TYPE 1.44MB  
JUMPER IN POS. 2-3: PS/2 TYPE 1.44MB

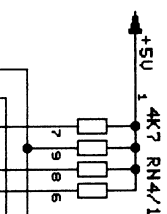
4) C104 IS BLOCK CAP TO OSC1  
5) Q2, C102, C103 ONLY REQUIRED IF JS8A OPEN, JS8B CLOSED

T10-83



# SERIAL INTERFACE

COMOUT[2]  
COMINT[2]



RESETDRU[2,3,11-15]  
RESOUT[2,5,6]

10D<0:7>[2,5,6,8]

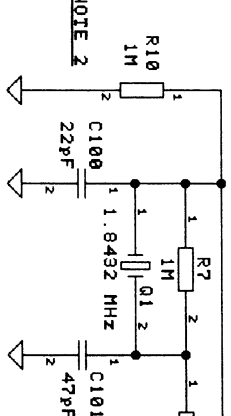
0 1 2 3 4 5 6 7  
D0 D1 D2 D3 D4 D5 D6 D7

SA<0:2>[2,3,5-7,11-15]

19 DOSTR 22 DISTR 25 ADS 28 A0 UCC=40 27 A1 GND=20 26 A2

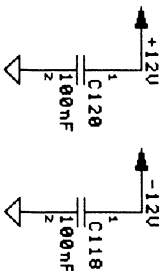
CS-COM[2]  
10H-DIV[2]  
10R-DIV[2]

14 CS2 18 DOSTR 21 DISTR 16 XTAL1 17 XTAL2 9 CLK BRADOUT U8



NOTE 2

NOTES: 1) C118 AND C120 ARE  
BLOCK CAPS FOR U8  
2) R10 ASSEMBLED ONLY IF  
REQUIRED



NOTE 1

**Schneider**

DRAWN BY:  
H. ULRICH

APPROVED:

TITLE:  
SCHEMATIC  
TOWER-BGA/10

USED ON:  
TOWER-AT

SIZE  
A3

NO 228

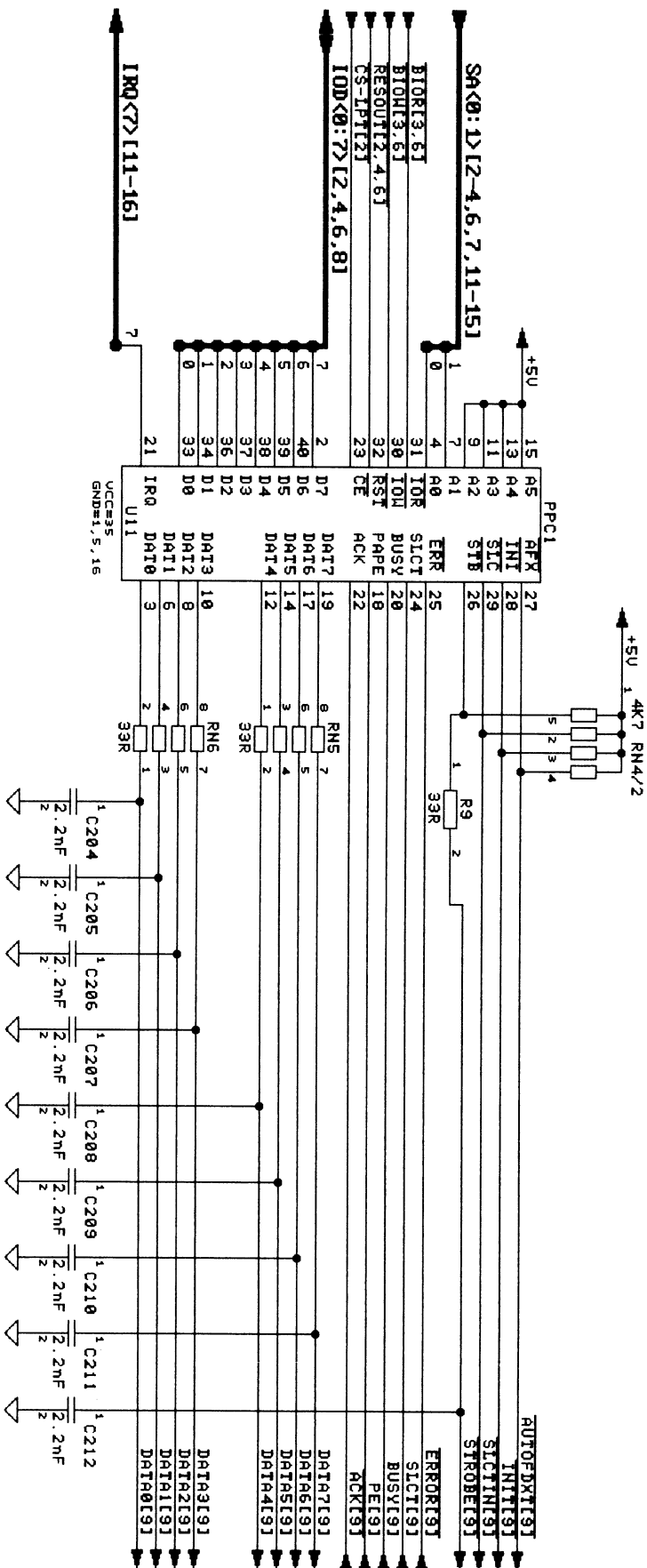
REV  
8

DATE: 11-18-88

SHEET: 4 OF 16

TIO-84

# PARALLEL INTERFACE



**Schneider**

DRAWN BY:  
H. ULLRICH

APPROVED:

SCHNITTSTUPE  
TOMER-EGA/10

USED ON:  
TOMER-AT

SIZE  
A3

50 228

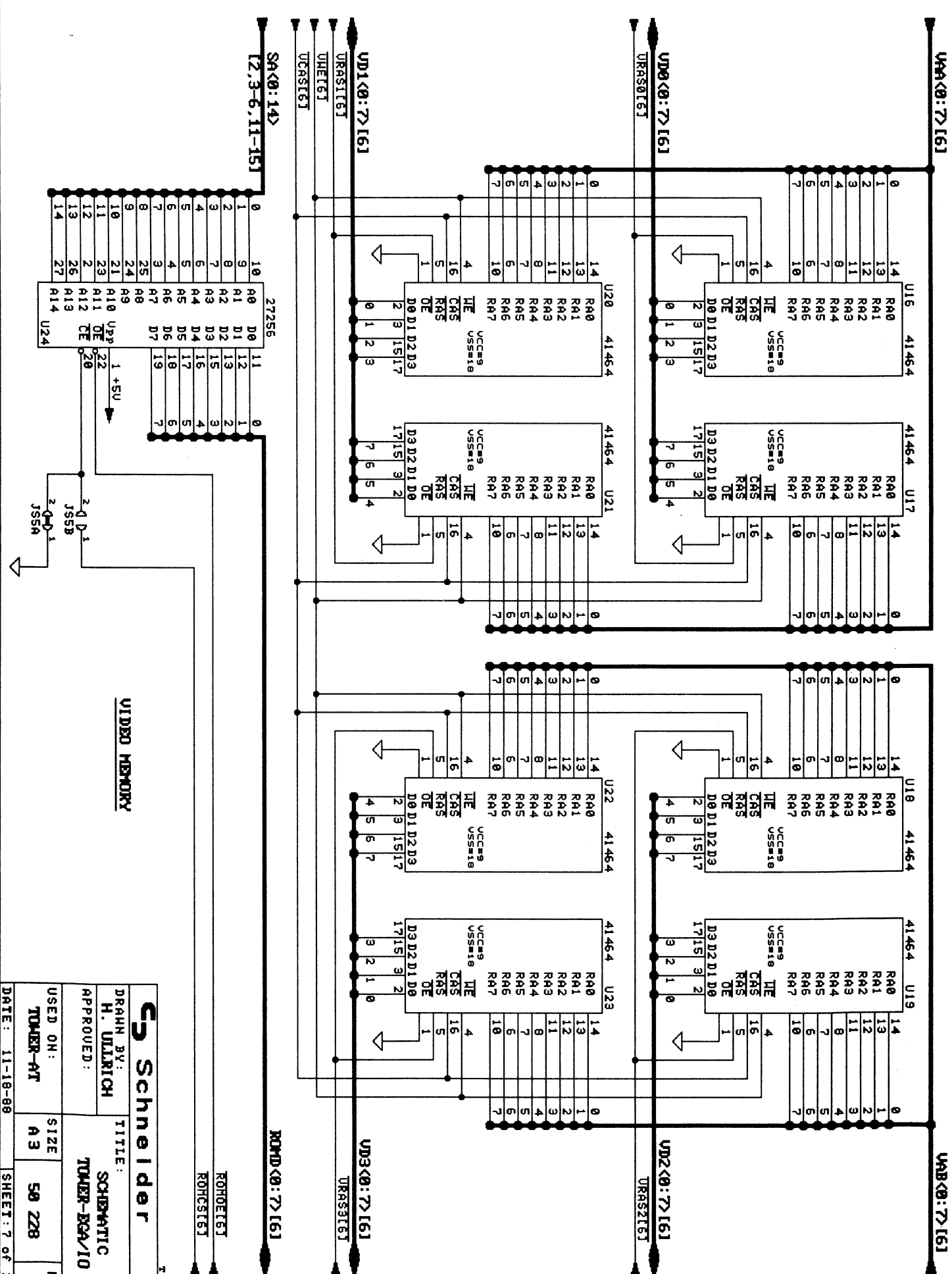
REV  
8

DATE: 11-10-88

SHEET: 5 of 16

TIO-85





UNIDED MEMORY

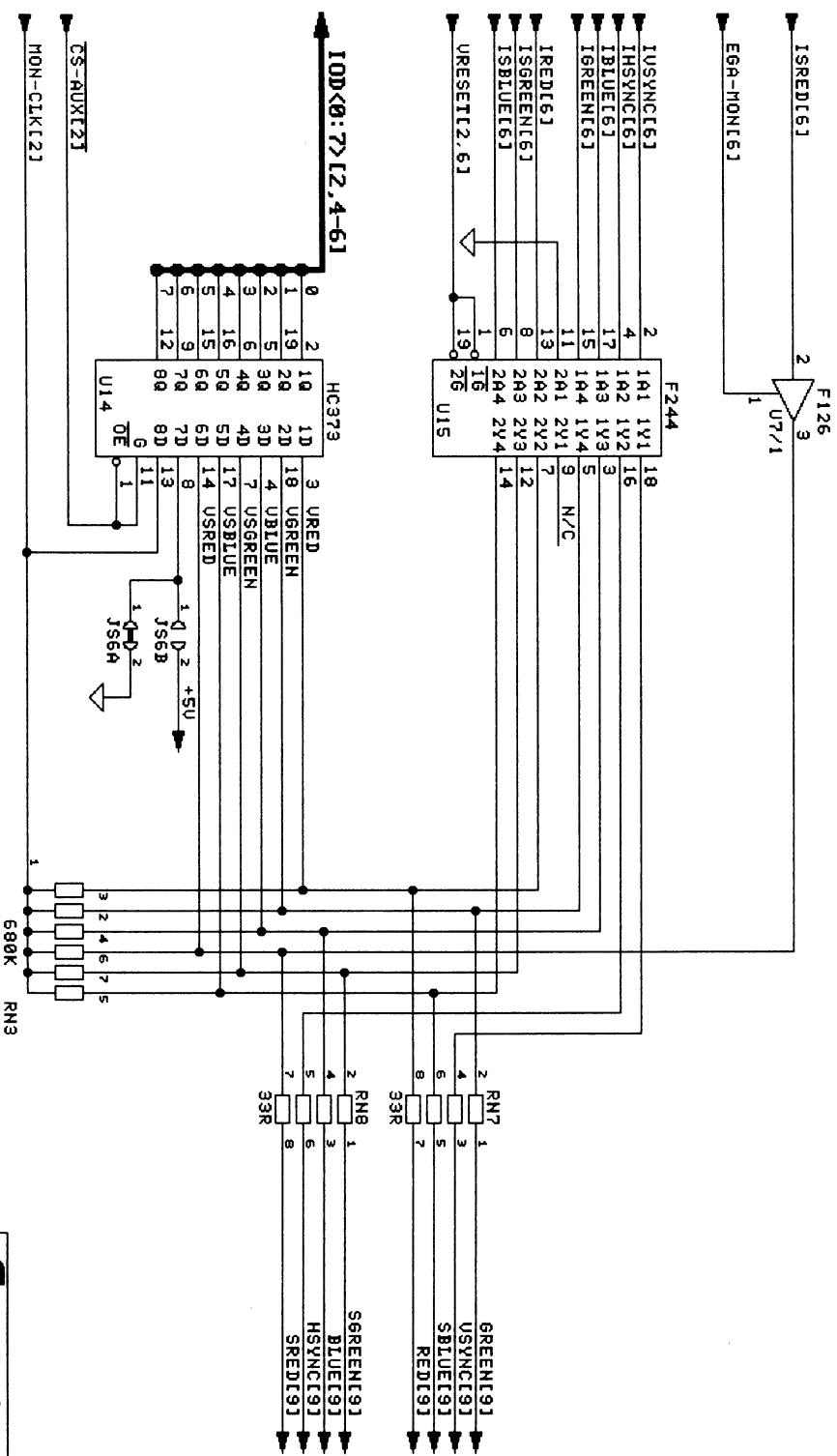
**Schneider**

DRAWN BY: H. ULLRICH  
 TITLE: SCHNITTSTELLE  
 APPROVED: TUMER-EGA/10

USED ON: SIZE A3 SO 228 REV 8  
 TUMER-AT

DATE: 11-18-88 SHEET: 7 of 16

# VIDEO INTERFACE



**Schneider**

DRAWN BY:  
H. ULRICH

APPROVED:

TITLE:  
SCHEMATIC  
TOWER-EGA/10

USED ON:  
TOWER-AT

SIZE  
A3

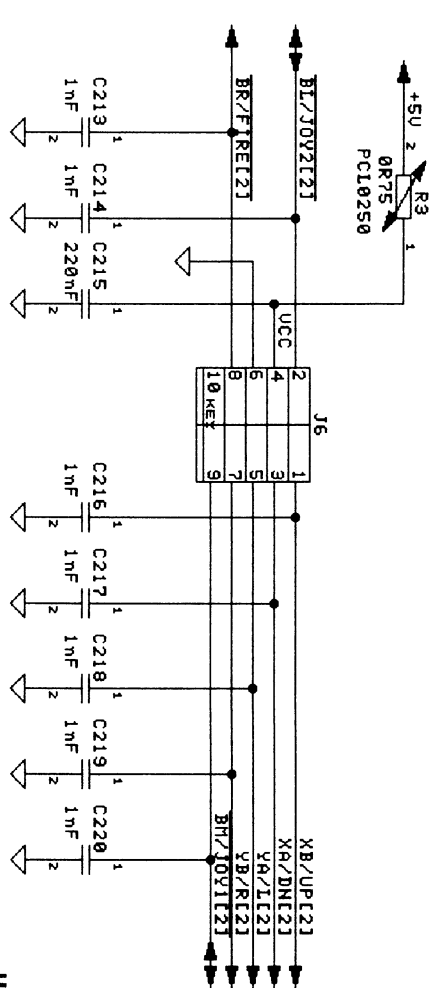
REV  
8

DATE: 11-18-88

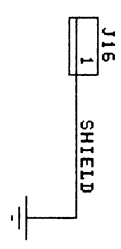
SHEET: 8 OF 16

MOUSE/JYSTICK  
HEADER DUAL ROW 2x5 PIN

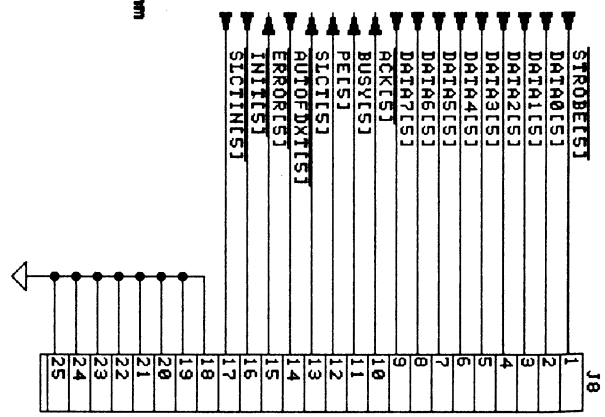
CURRENT LIMITING PIC



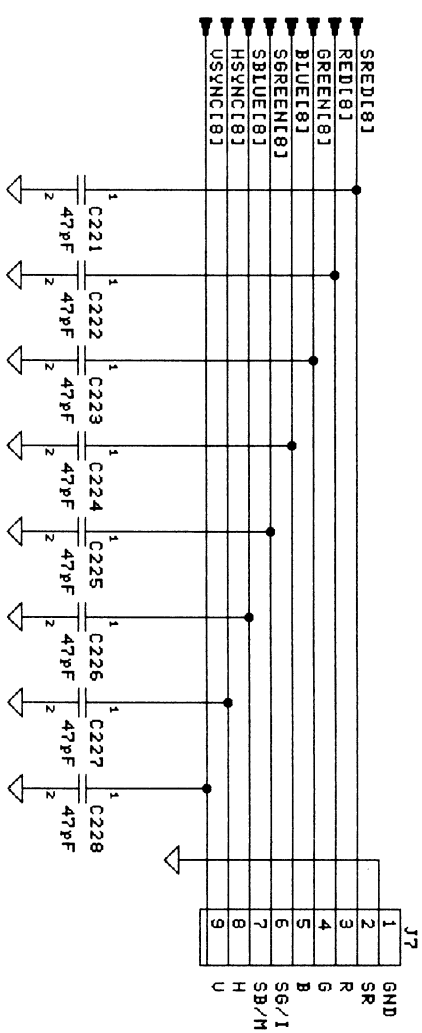
SHIELD CONNECTOR  
HEADERS FASTON 2.8 x 0.8 mm



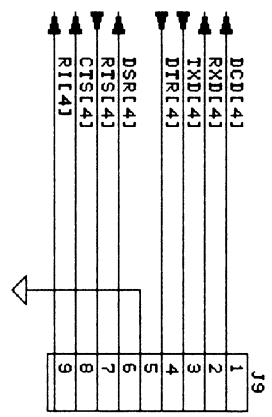
PARALLEL PORT  
25 PIN SUBD CONN. FEMALE



VIDEO MONO/RGB  
9 PIN SUBD CONN. FEMALE



SERIAL PORT  
9 PIN SUBD CONN. MALE



CONNECTORS I

**Schneider**

DRAWN BY: H. ULLRICH  
APPROVED: TITLE: SCHEMATIC  
TOWER-EGA/10

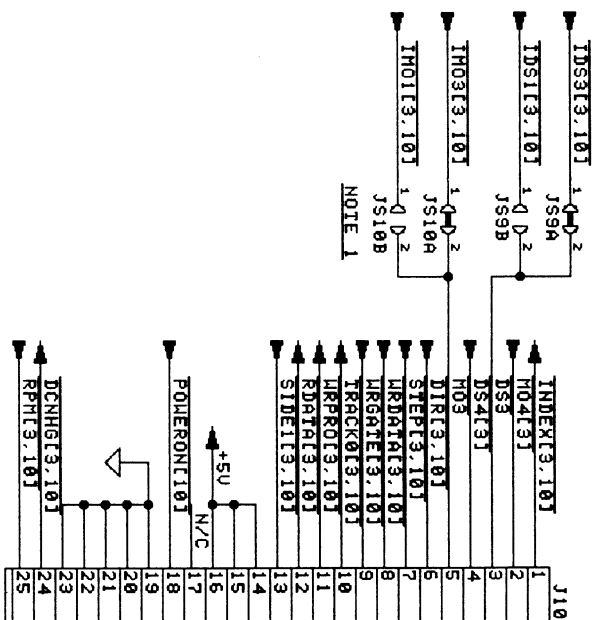
USED ON: SIZE A3  
TOWER-AT 50 228

REV 8

DATE: 11-10-88 SHEET: 9 of 16

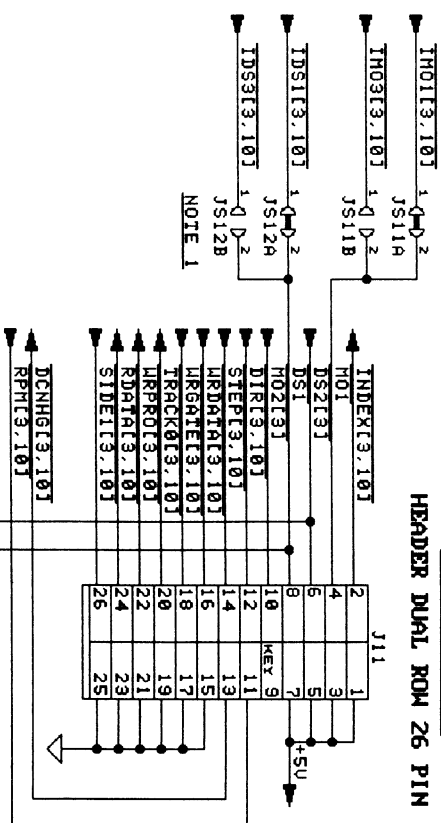
# FLOPPY EXTERN

## 25 PIN SUBD CONN. FEMALE

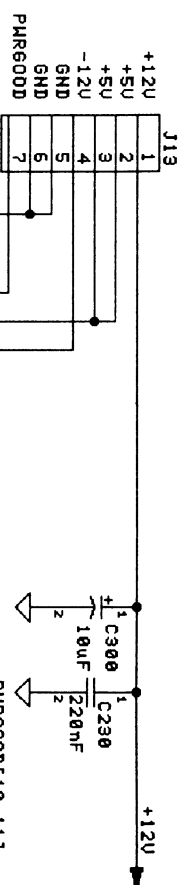


# FLOPPY INTERN

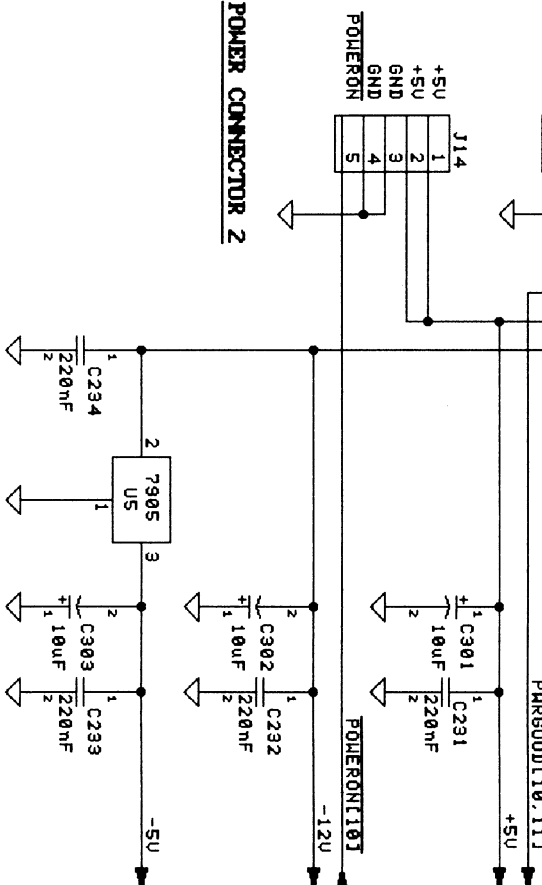
## HEADER DUAL ROM 26 PIN



## POWER CONNECTOR 1

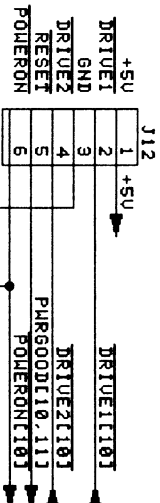


## POWER CONNECTOR 2



# LED CONNECTOR

## HEADER MICRO MATCH 6 PIN



## CONNECTORS II

**Schneider**

DRAWN BY:  
H. ULRICH

APPROVED:

USED ON:

DATE: 11-18-88

TITLE:  
SCHEMATIC  
TOWER-BGA/10

SIZE  
A3

50 228

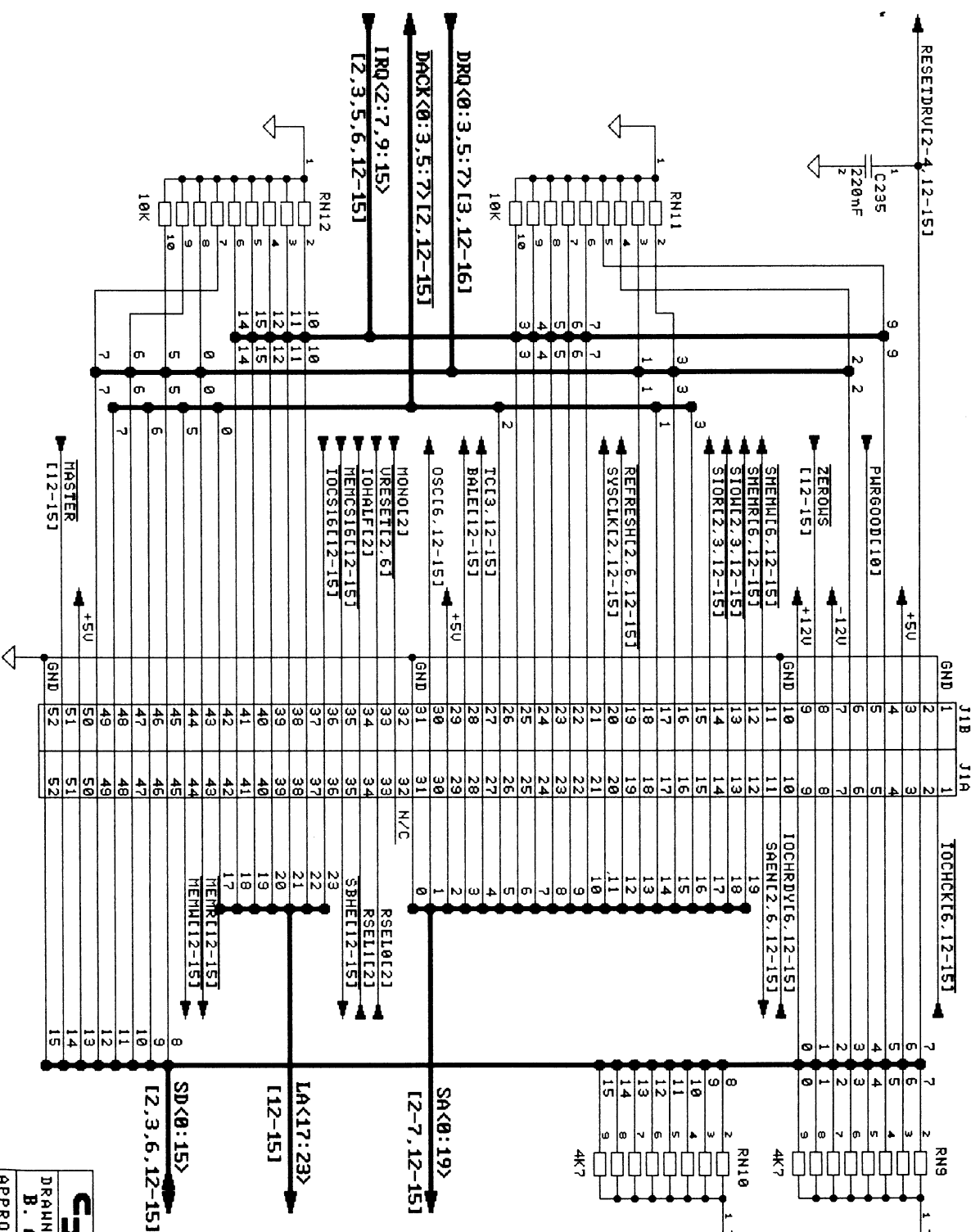
REV  
8

T10-810

SHEET: 10 of 16

DATE: 11-18-88

SHEET: 10 of 16



**Schneider**

TIO-811

**DRAMA BY:** B. ASSMANN

**APPROVED:**

**TITLE:** SCHEMATIC

**USED ON:** TOWER-AT

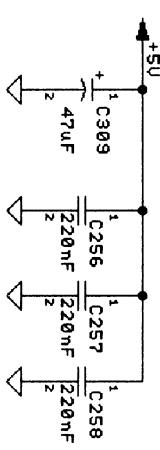
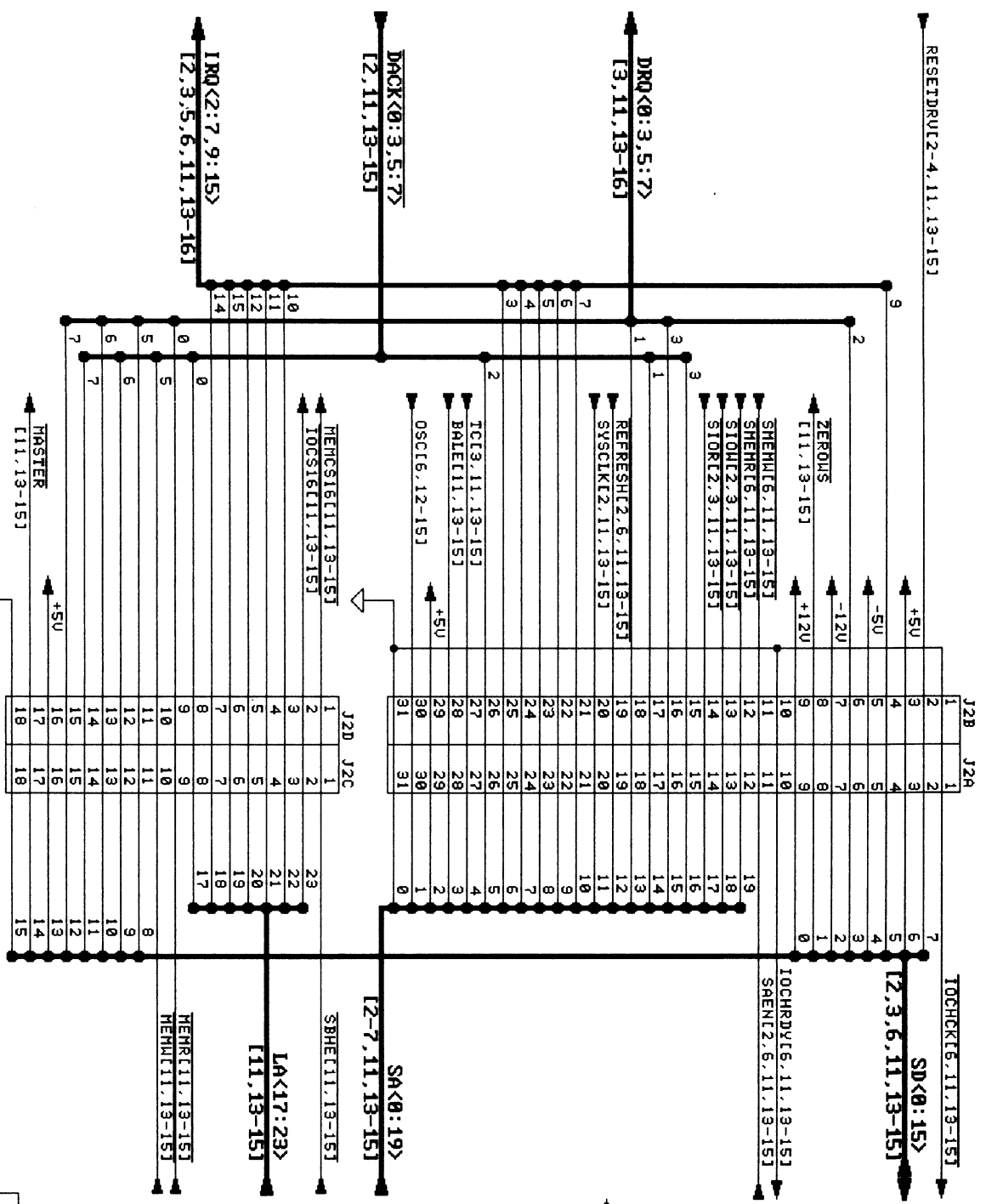
**SIZE:** A3

**DATE:** 11-18-88

**SHEET:** 11 of 16

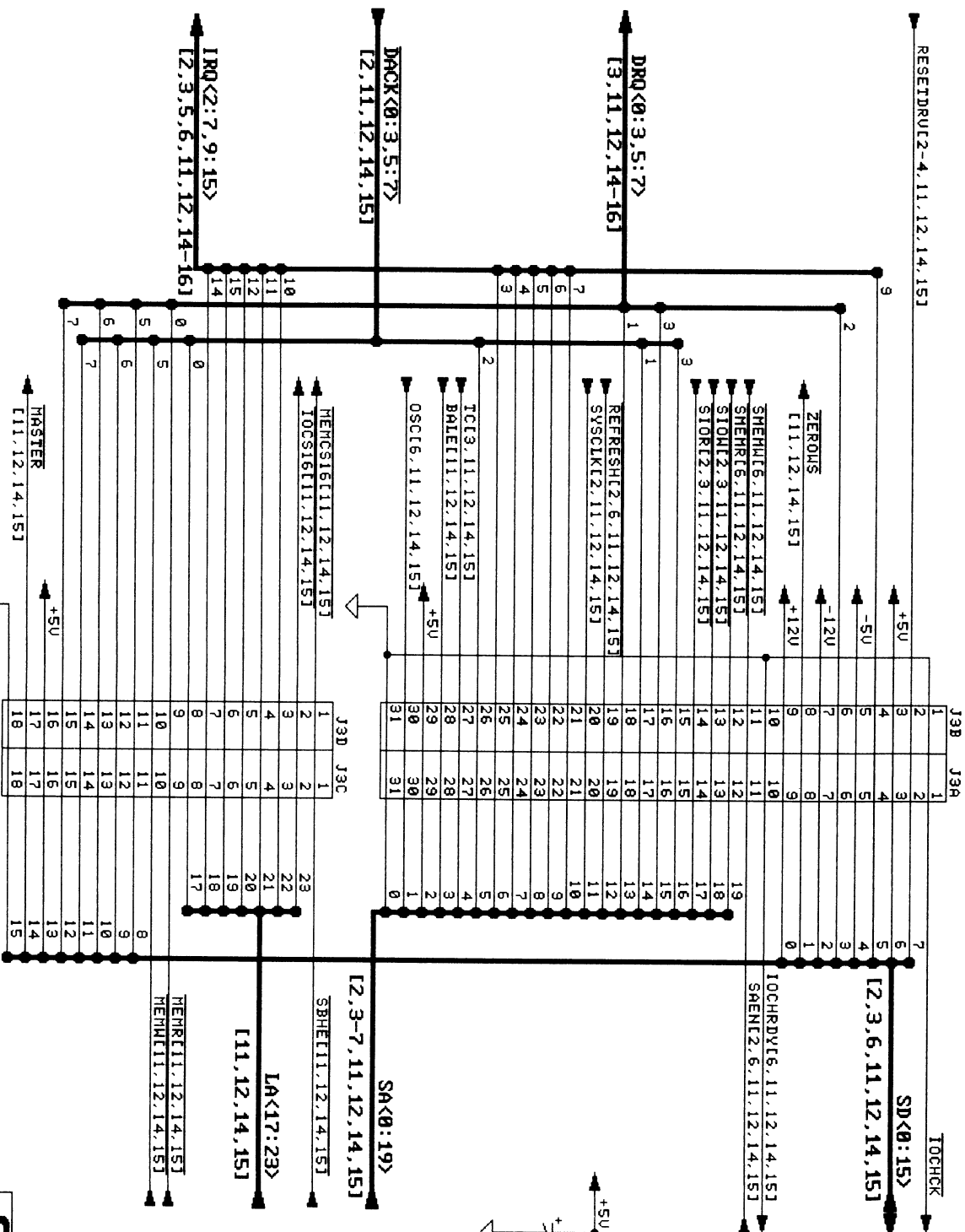
**REV:** 8





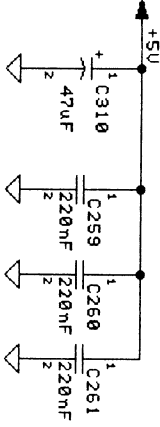
NORMAL SLOT

<b>Schneider</b>			
DRAWN BY: H. ULRICH		TITLE: SCHEMATIC TOWER-EGA/10	
APPROVED:		REV:	
USED ON:	SIZE	REV	REV
TOWER-AT	A3	50 228	8
DATE: 11-18-88		SHEET: 12 OF 16	



NOTE 1

NOTES: 1) CARDEGE CONNECTOR J3C-D NOT ASSEMBLED



NORMAL SLOT

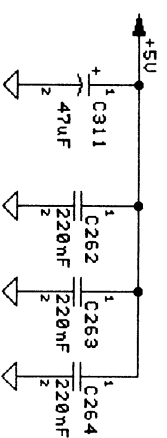
**Schneider**

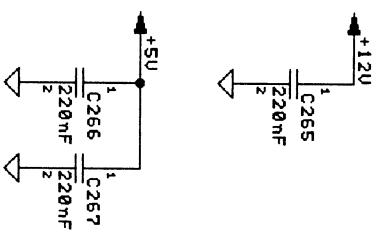
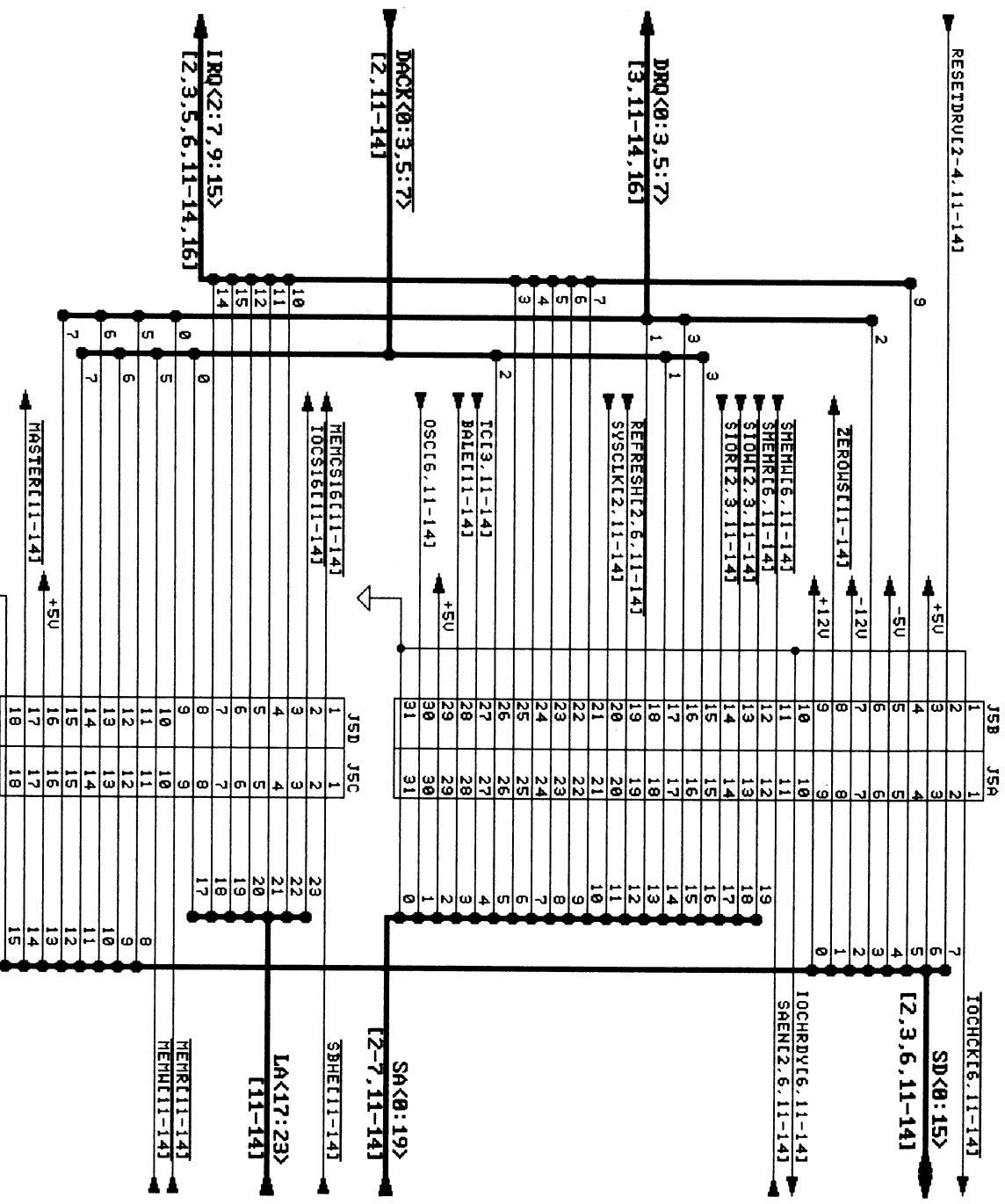
DRAWN BY: H. ULRICH  
TITEL: SCHNITTSTICH  
TOWER-EGA/10

APPROVED: TOWER-EGA/10

USED ON: TOWER-AT  
SIZE: A3  
SHEET: 50 228  
REV: 8

DATE: 11-18-88  
SHEET: 13 of 16





NORMAL SLOT

**Schneider**

DRAWN BY:  
H. ULRICH

APPROVED:

TITLE:  
SCHEMATIC

TOWER-EGA/10

USED ON:

TOWER-AT

SIZE

A3

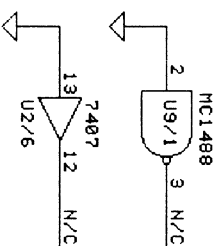
REV

8

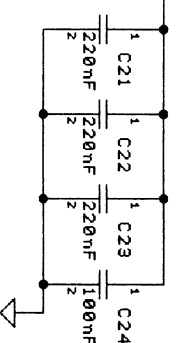
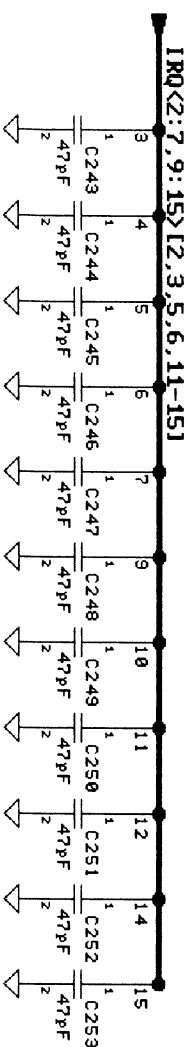
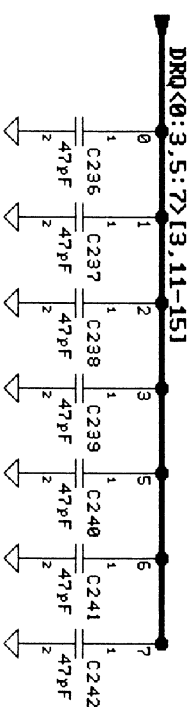
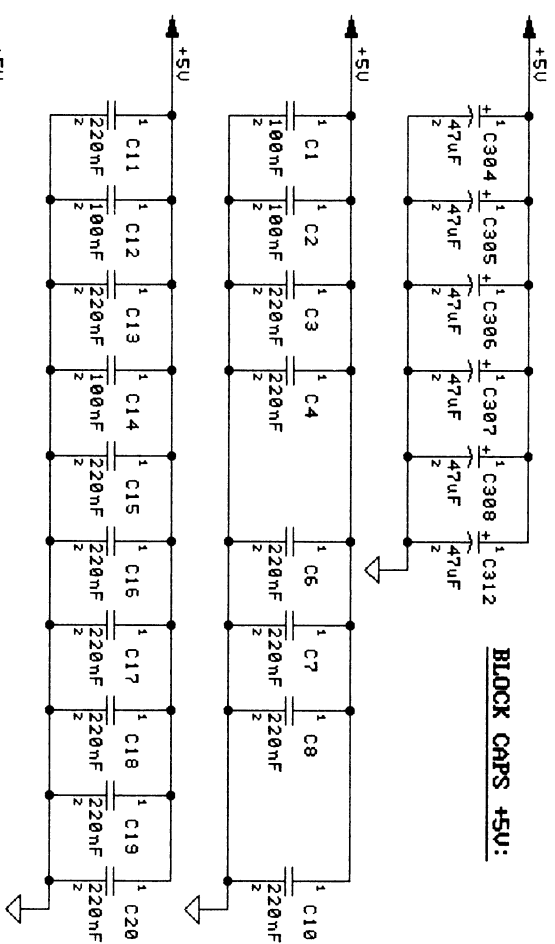
DATE: 11-18-88

SHEET: 15 of 16

# SPARE GATES



# BLOCK CAPS +5V:



**Schneider**

710-816

DRAWN BY:  
B. ASSMANN

APPROVED:

TITLE:  
SCHEMATIC  
TOWER-EGA/10

USED ON:

TOWER-AT

SIZE  
A3

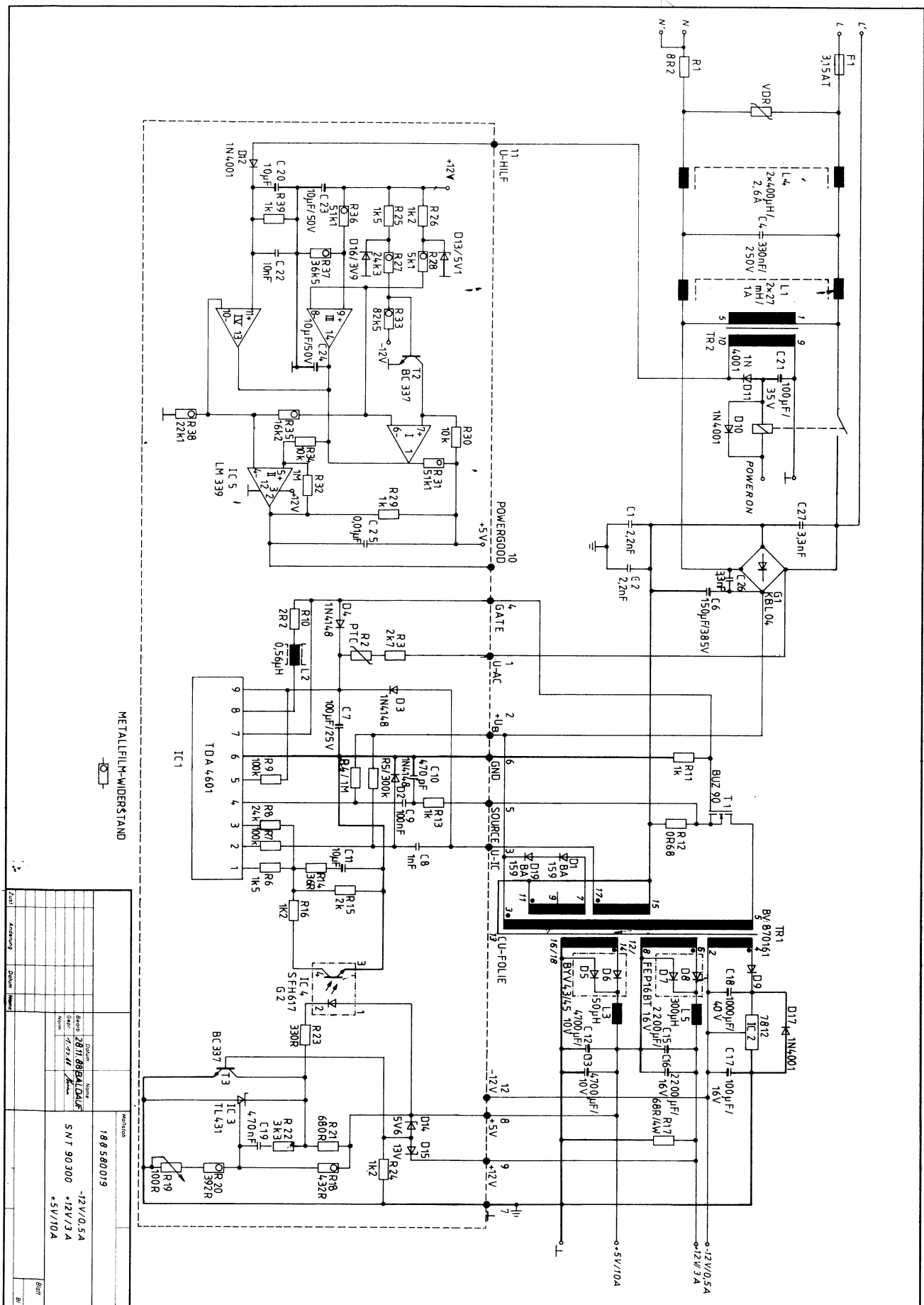
50 228

REV  
8

DATE: 11-18-88

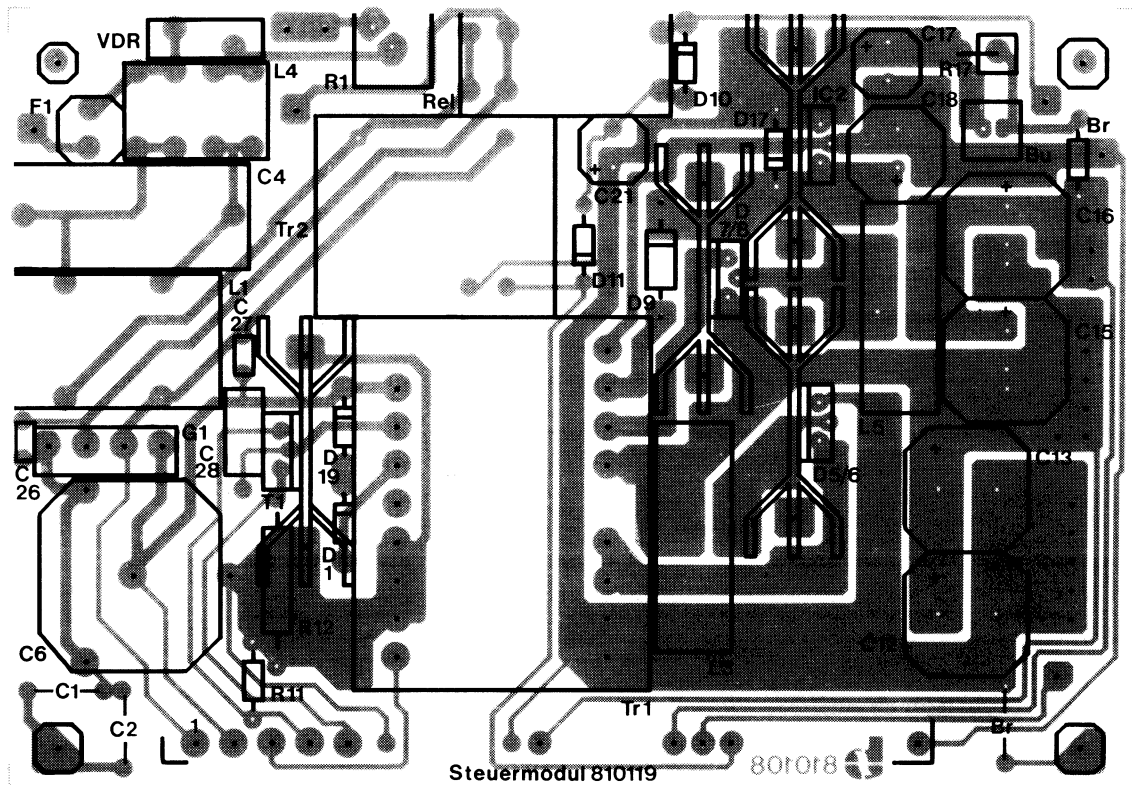
SHEET: 16 OF 16

### Power supply SCD–SNT 90/B03

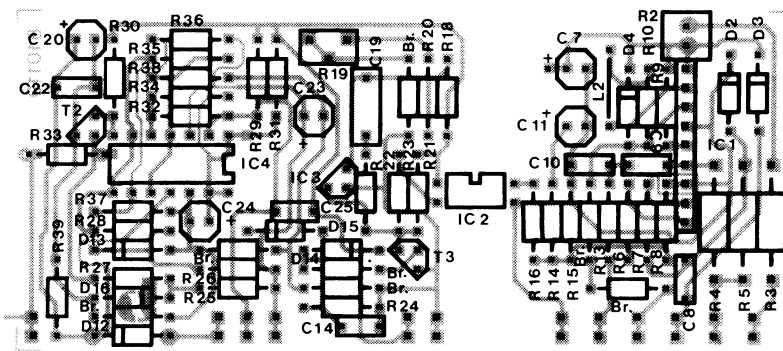


# Power supply SCD-SNT 90/B03

Component side



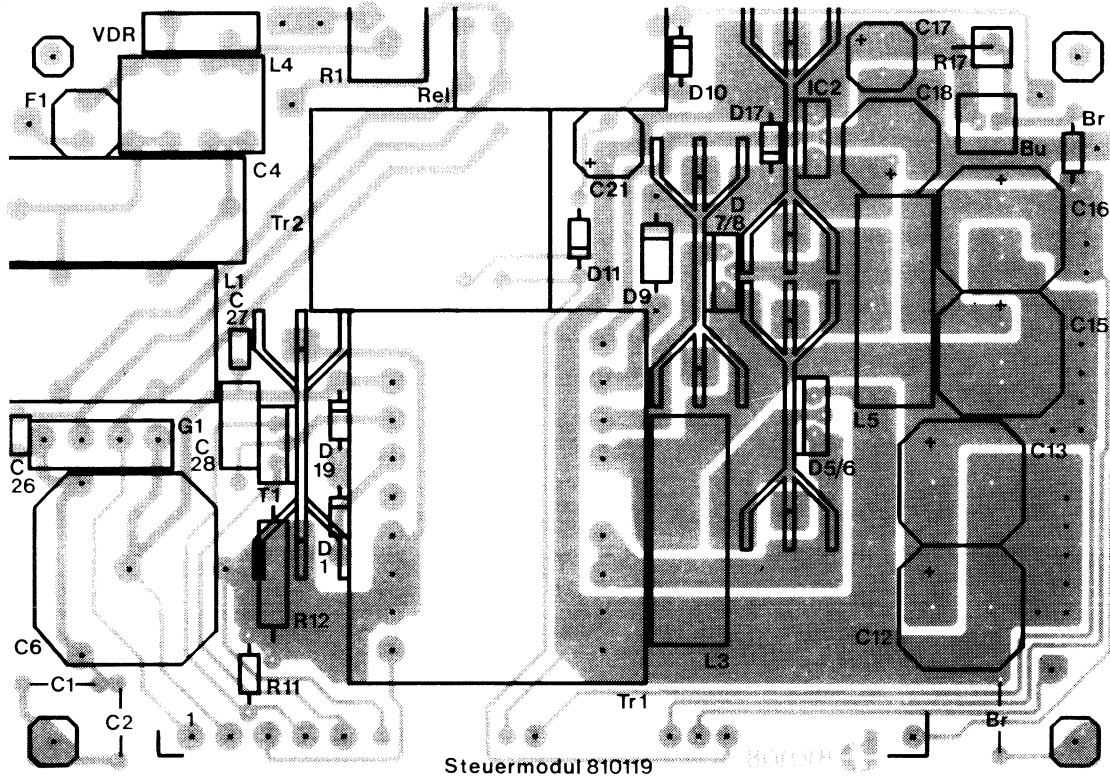
Schaltnetzteil „Tower“ SCD-SNT 90/01 B03 Id.580018 Ident Nr.7270-50215



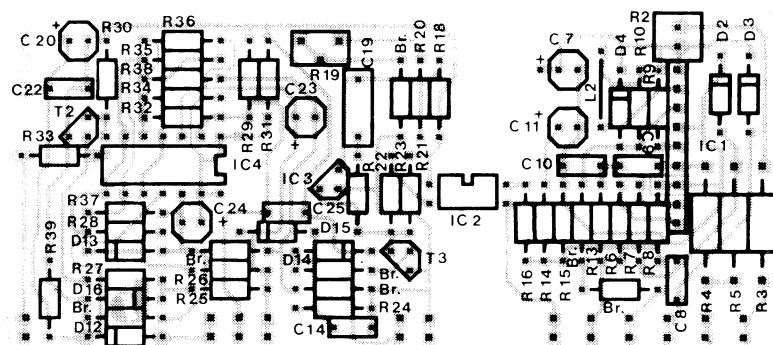
Steuermodul 810119

# Power supply SCD-SNT 90/B03

Component side



Schaltnetzteil „Tower“ SCD-SNT 90/01 B03 Id.580018 Ident Nr.7270-50215

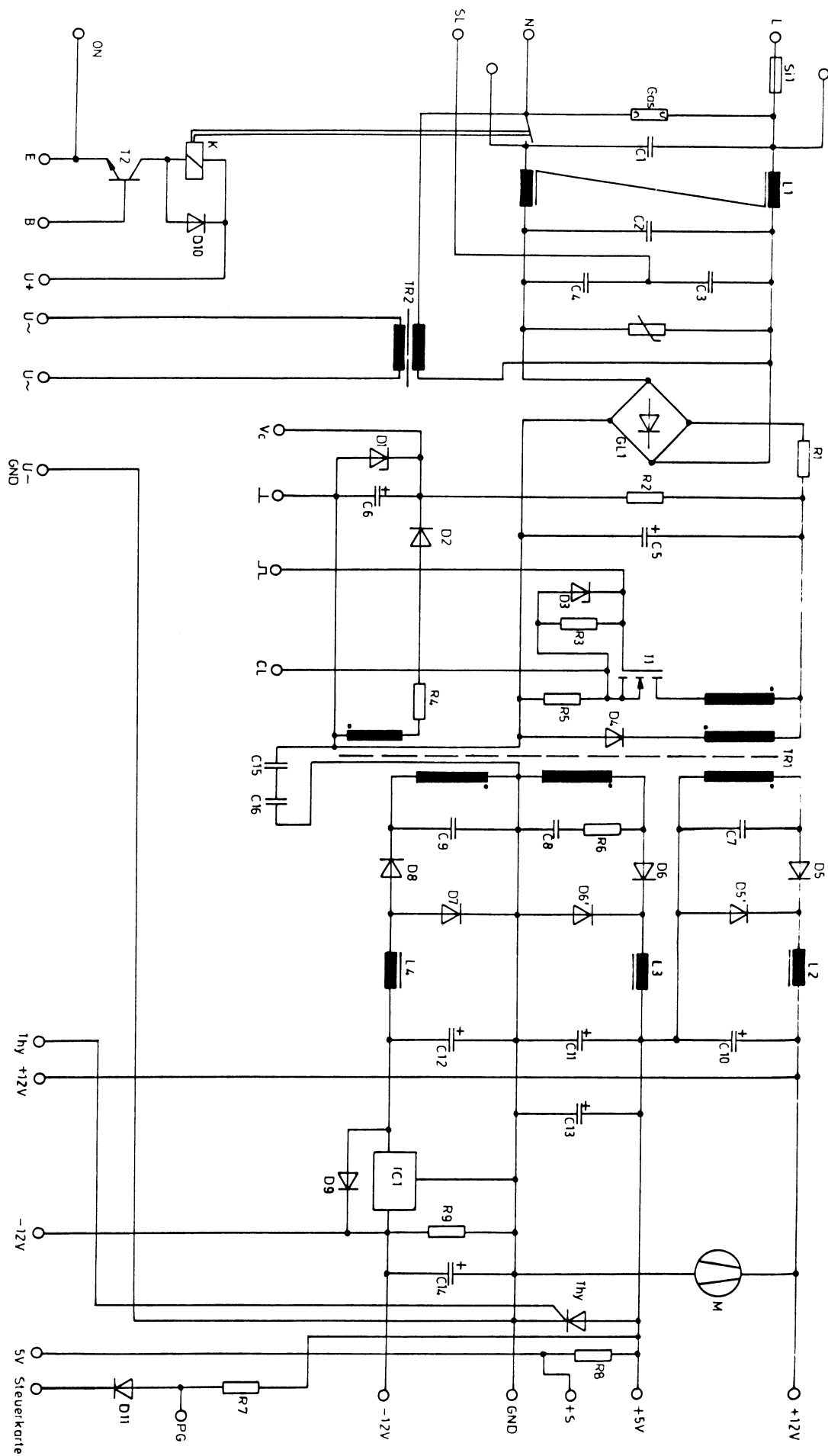




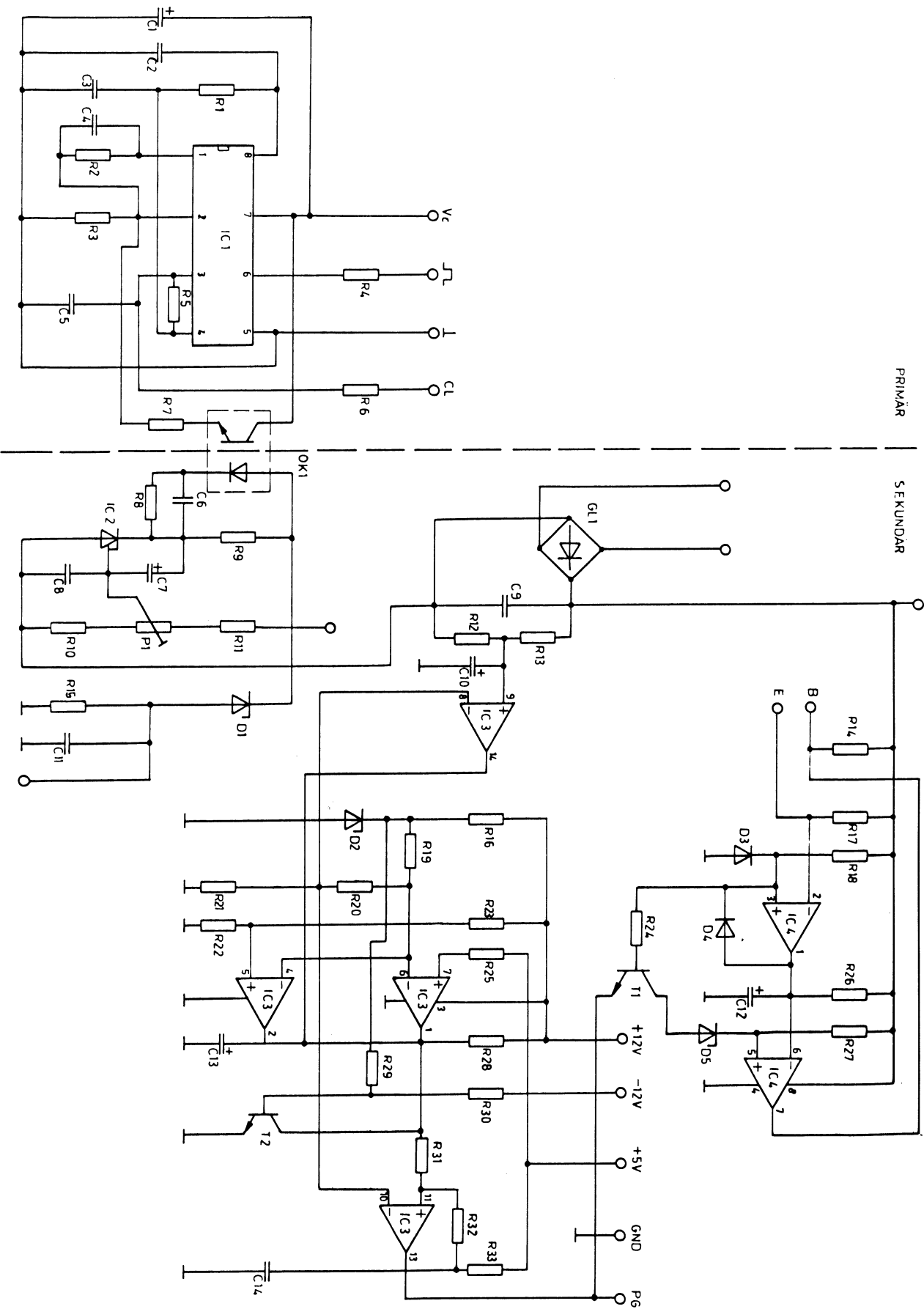
# Schematic diagram

## Power supply SCD-SNT 90/B03

### Mainboard

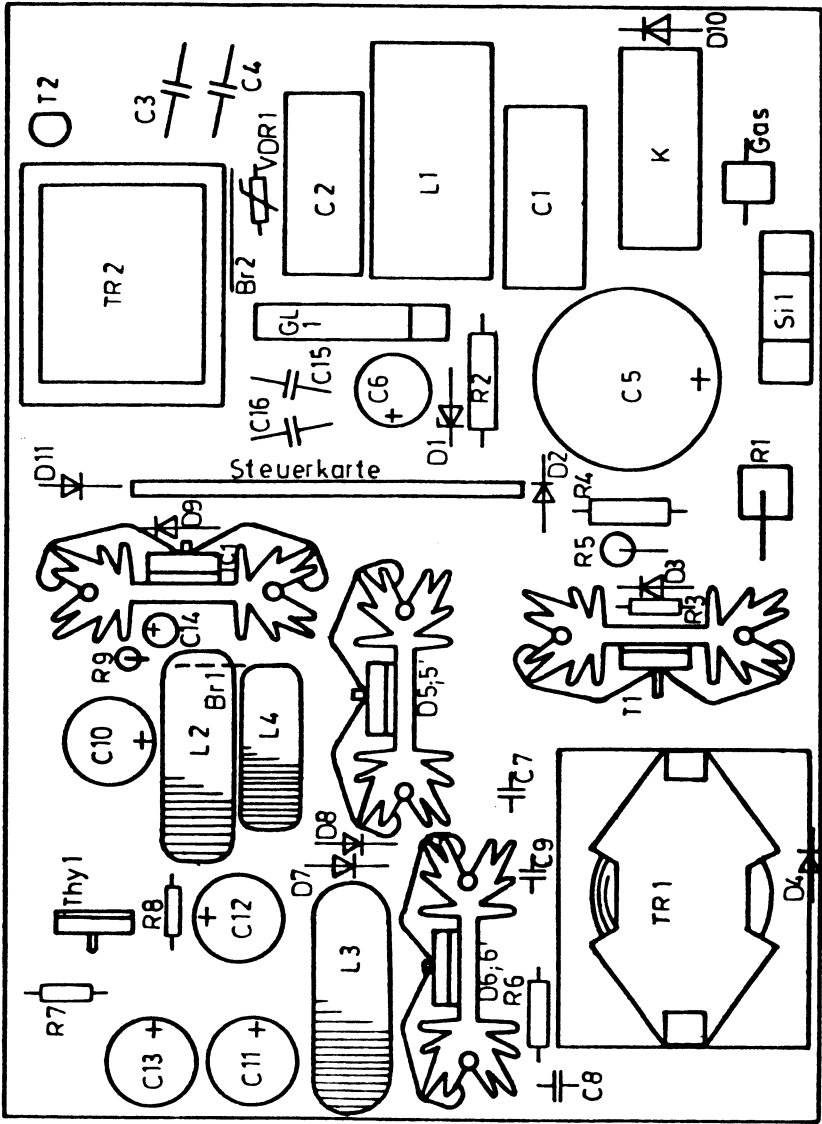


**Schematic diagram**  
**Power supply SCD-SNT 90/E02**  
**Controlboard**

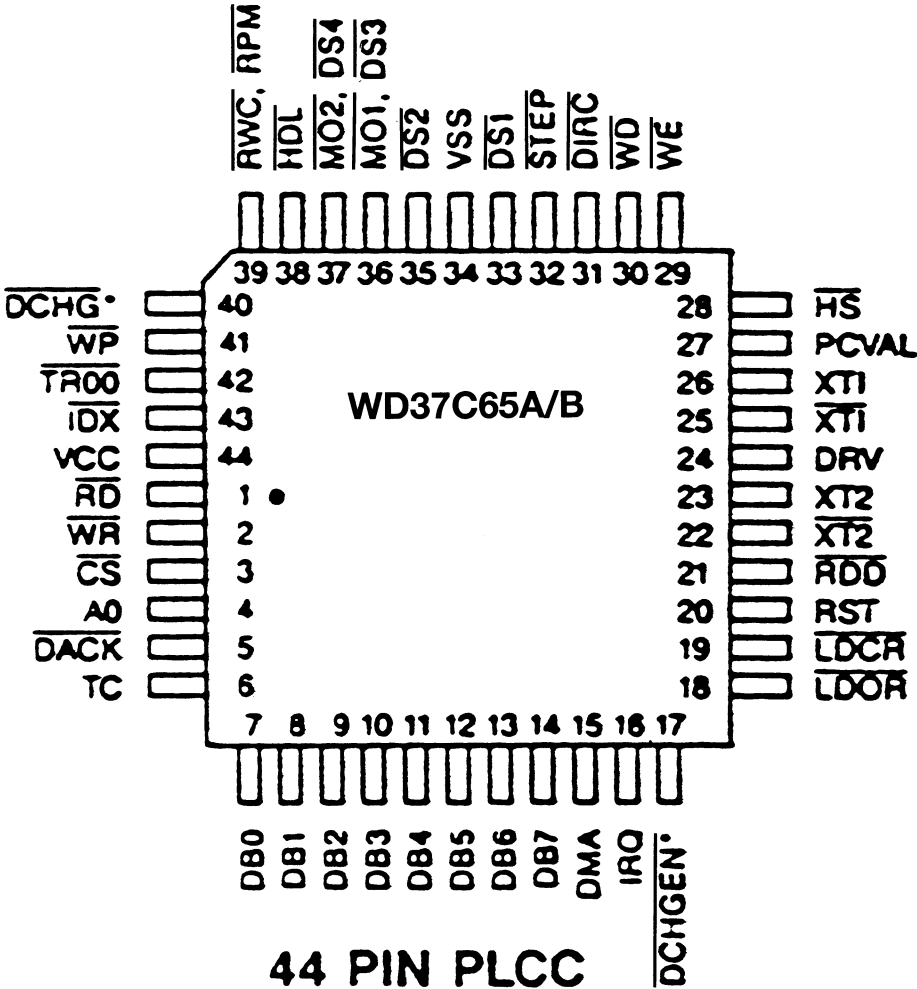
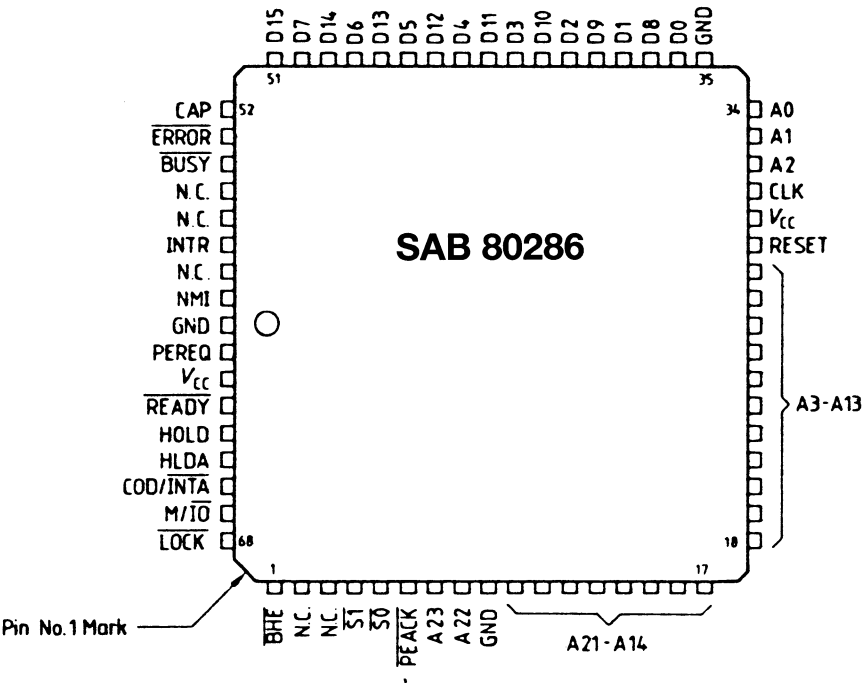


Power supply SCD-SNT 90/E02

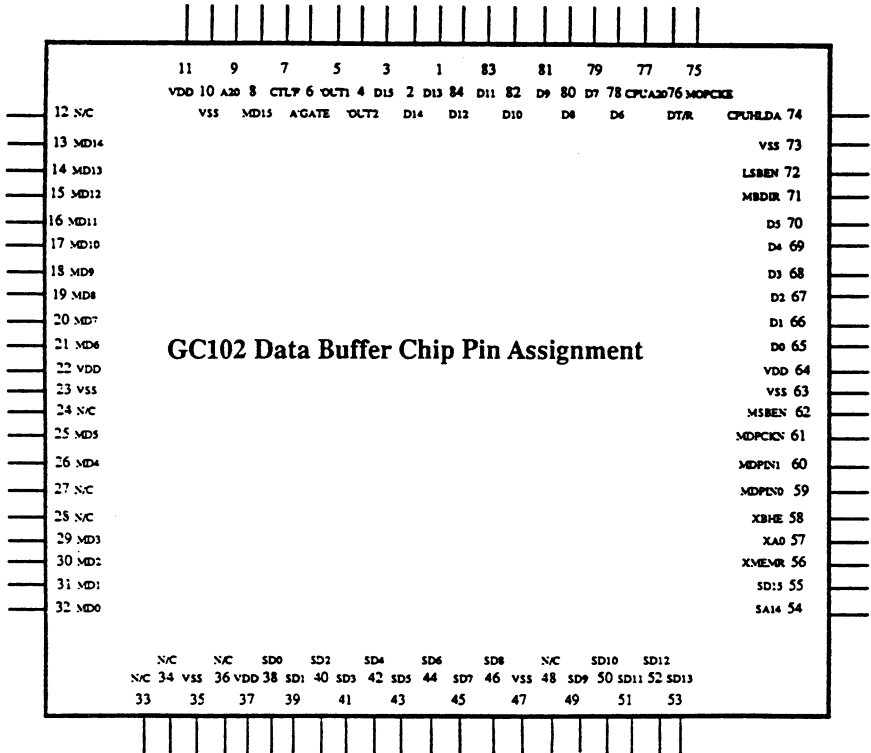
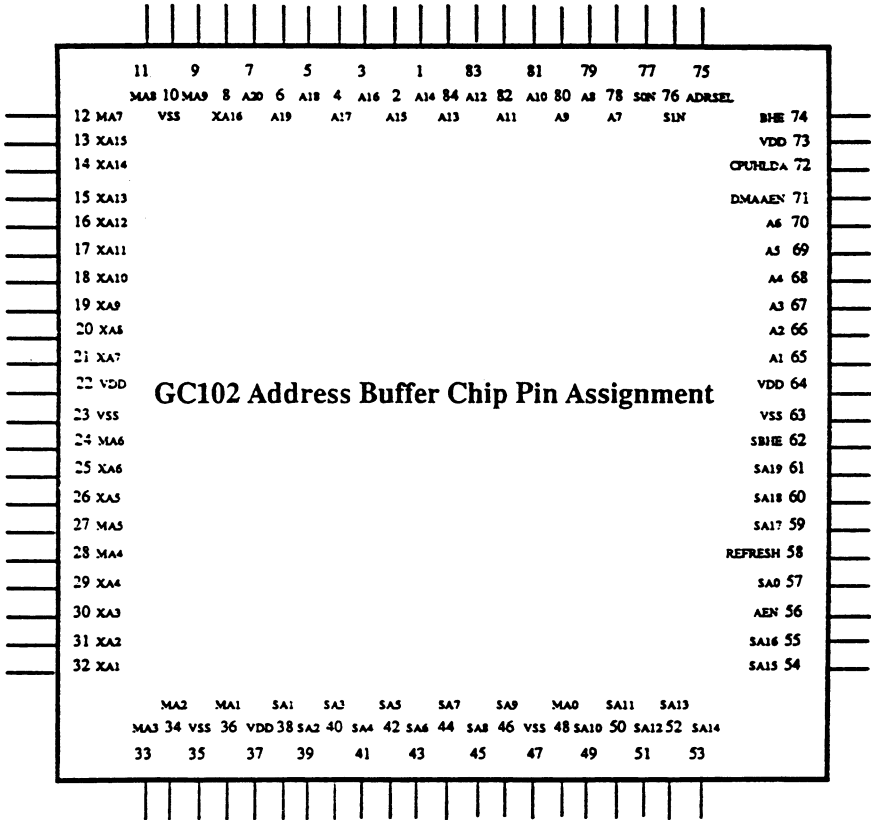
Component side



Pin assignment



Pin assignment



Pin assignment

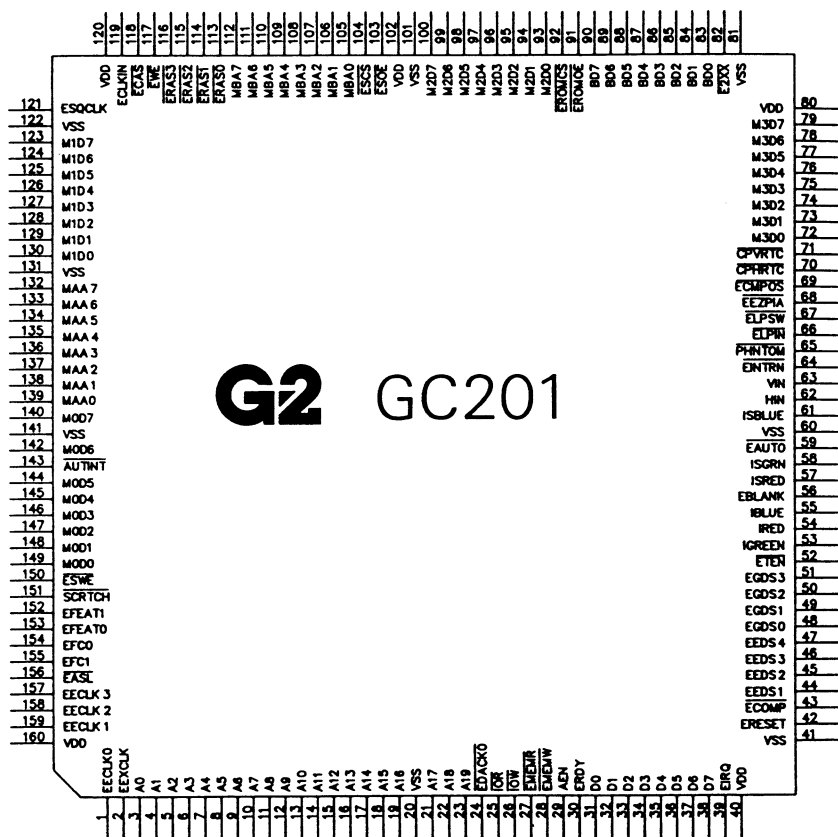
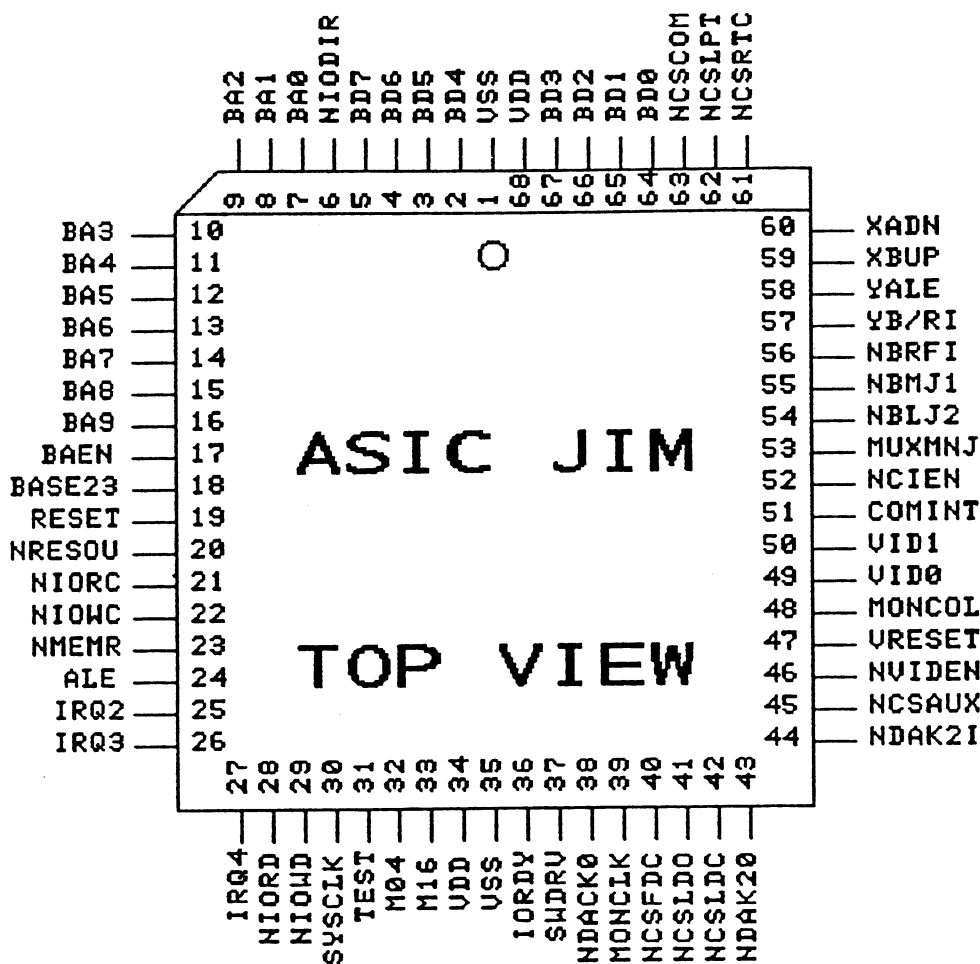
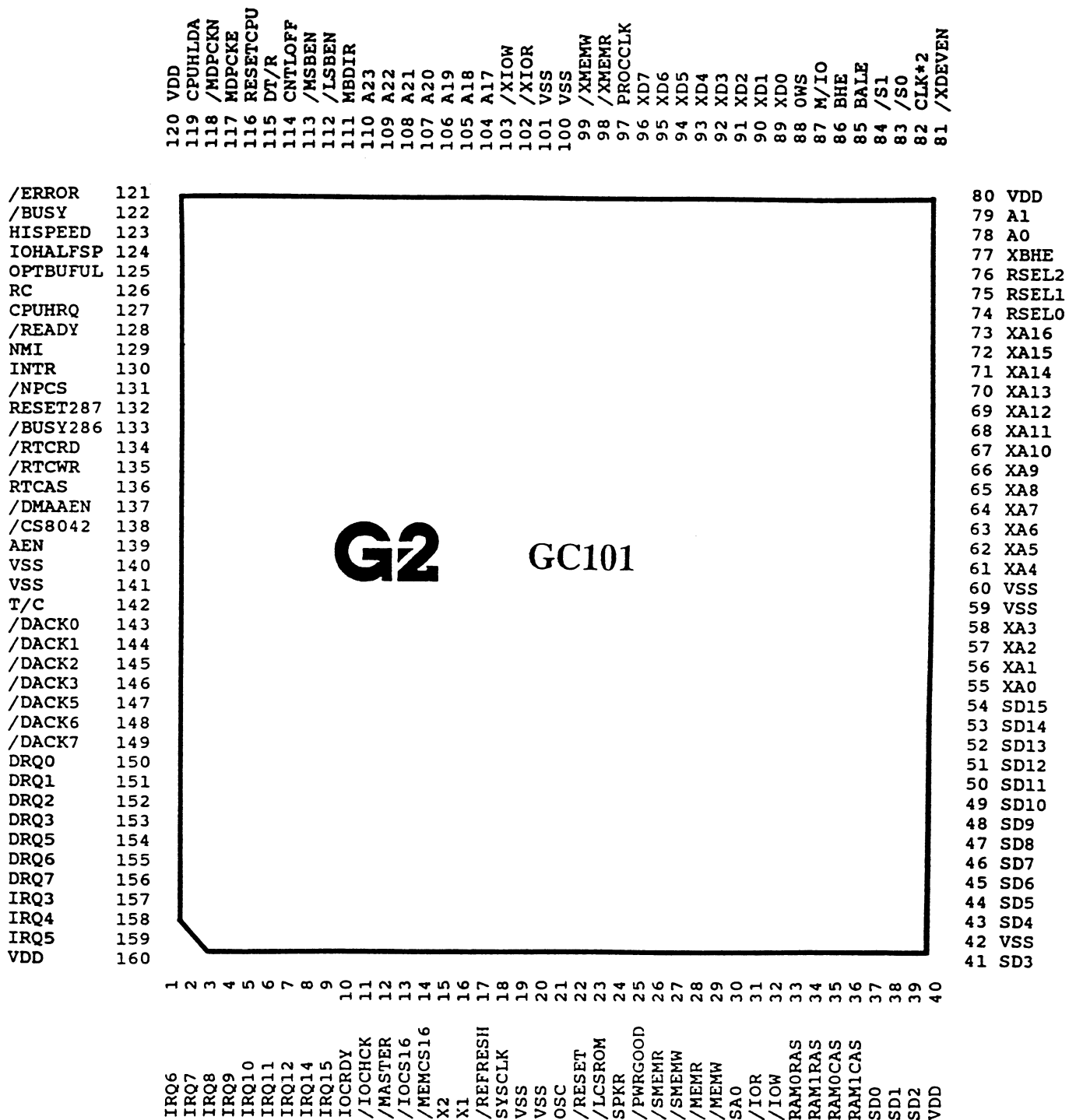


Figure 2 Pin Assignment



## Pin assignment



---

# **Appendix A:**

**Different schematics CPU Rev. 8 – Rev. 7 (Layout Rev. 3)**

---







---

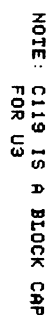
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# Appendix B:

**Different schematics EGA I/O Rev. 8 – Rev. 7 (Layout Rev. 2 without Reworks)**

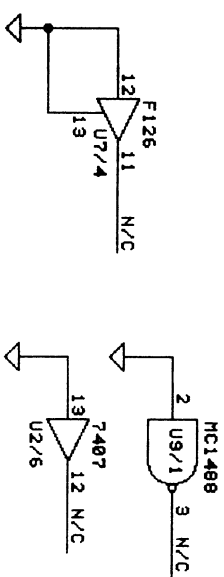
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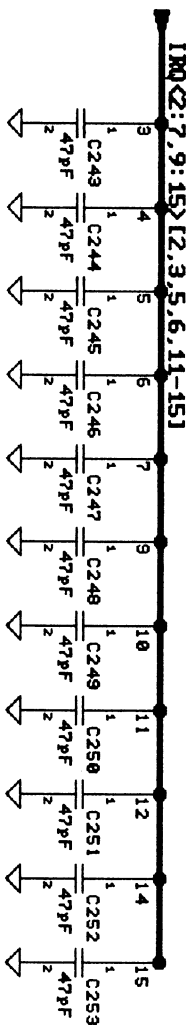
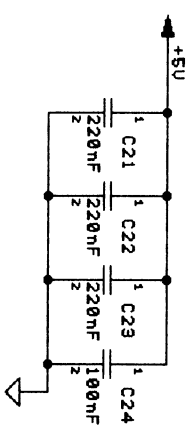
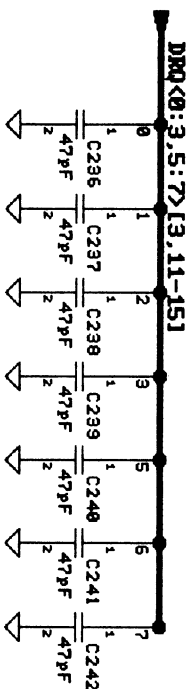
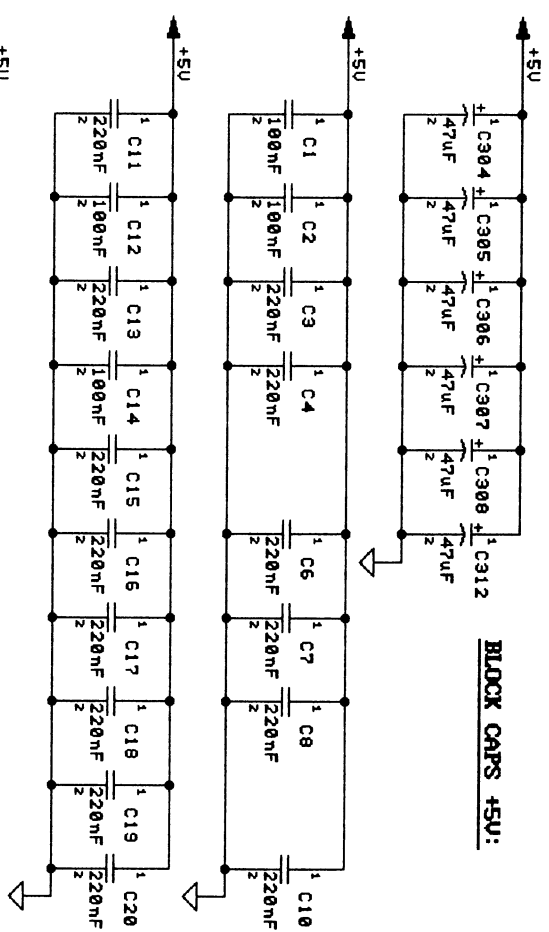
A vertical scale with horizontal tick marks at each integer from 0 to 5. The numbers 0, 1, 2, 3, 4, and 5 are printed to the left of the scale line.



# SPARE GATES



# BLOCK CAPS +5V:



**Schneider**

DRAWN BY:  
H. ULRICH

APPROVED:

TITLE:

SCHEMATIC  
TUMER-PC9/10

USED ON:

TUMER-PC

SIZE

A3

NO

50 228

REV

7

DATE: 08-11-08

SHEET: 16 of 16

---

# Appendix C:

**Schematics CPU Rev. 9 (Layout Rev. 5)**

---



# REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	05-13-88	SCHLAGE
2		05-18-88	ASSMANN
3		06-01-88	SCHLAGE
4	First Layout	06-22-88	SCHLAGE
5	Layout REV 2	08-06-88	ASSMANN
6	Layout REV 2 CORRECTIONS	08-22-88	ASSMANN
7	PCB REV 2A FIX OF BUS 'MASTER'	08-31-88	ASSMANN
8	PCB REV 4. LAYOUT: ADDITIONAL RESET LOGIC ELIMINATED	11-02-88	ULLRICH
9	PCB REV 5. LAYOUT: WITH GC 101 D	11-07-88	ASSMANN

## DRAWING FILES:

TDM\_91.DMG THIS SHEET  
 TDM\_92.DMG CPU SECTION  
 TDM\_93.DMG BIOS EPROMS  
 TDM\_94.DMG GC 101 D  
 TDM\_95.DMG KEYBOARD / CLOCKS  
 TDM\_96.DMG REAL TIME CLOCK  
 TDM\_97.DMG ADDRESS / DATA BUFFERS  
 TDM\_98.DMG TIMING FOR MEMORY  
 TDM\_99.DMG MEMORY ON SIL- MODULE  
 TDM\_910.DMG MEMORY ON BOARD  
 TDM\_911.DMG CONNECTORS  
 TDM\_912.DMG BLOCK CAPS

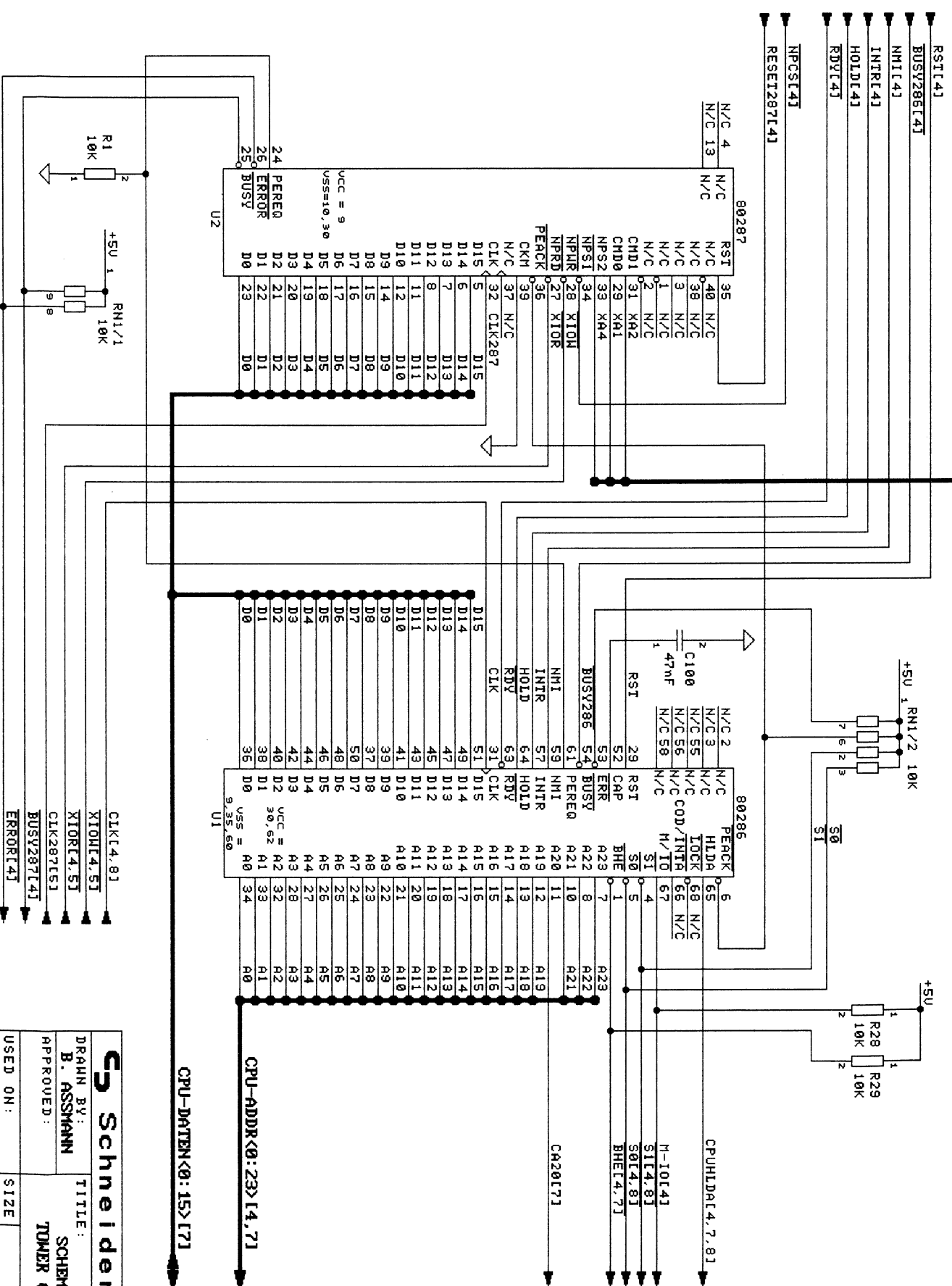

**Schneider**

DRAWN BY:  
 B. ASSMANN

APPROVED:

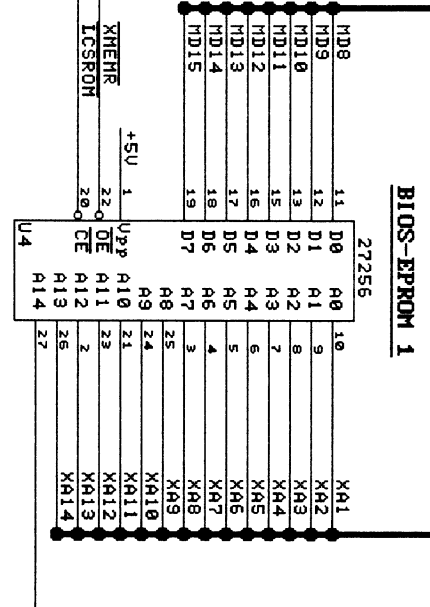
TITLE:  
 SCHEMATICS  
 TDMER CPU286

USED ON:	SIZE	50 229	REV
TDMER-AT	A 3		9
DATE: 11-07-88	SHEET: 1 of 12		

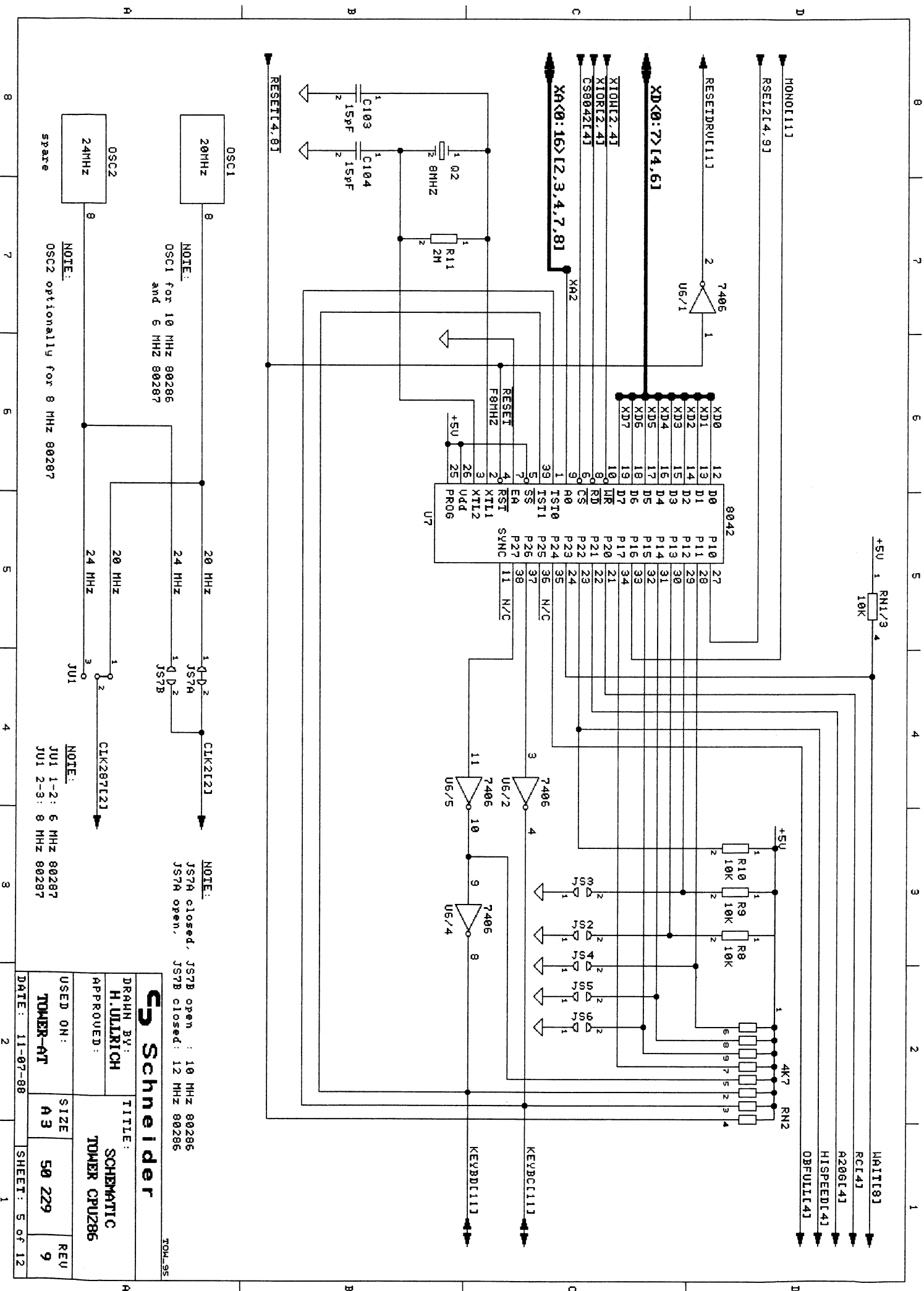




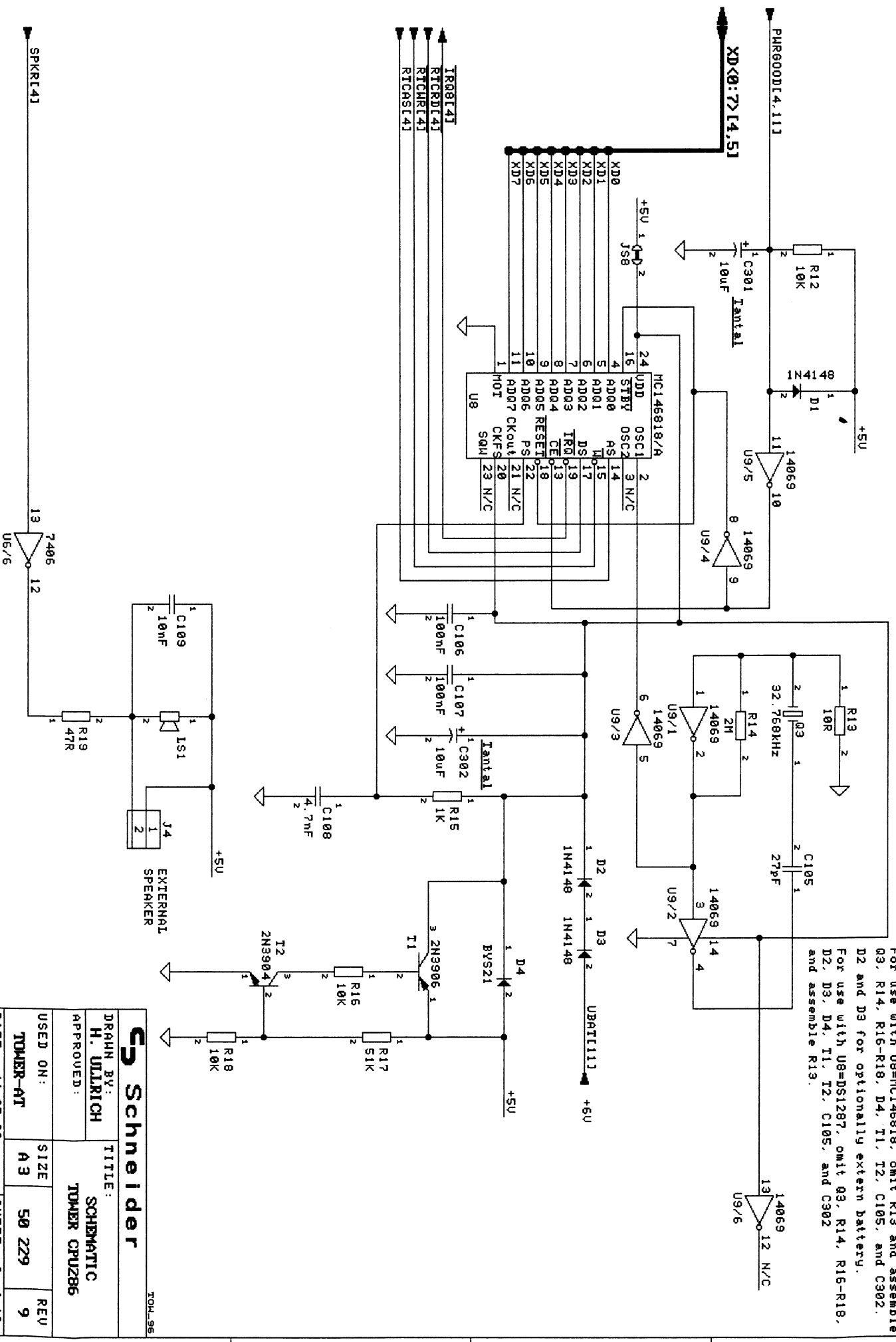
NOTE: JS1A closed, JS1B open : 27256  
JS1A open, JS1B closed : 27128







**NOTE:**  
 For use with U8=MC146818, omit R13 and assemble Q3, R14, R16-R18, D4, T1, T2, C105, and C302.  
 D2 and D3 for optionally external battery.  
 For use with U8=DS1287, omit Q3, R14, R16-R18, D2, D3, D4, T1, T2, C105, and C302 and assemble R13.



**Schneider**

TOM-95

**DRWN BY:**  
H. ULRICH

**APPROVED:**

**TITLE:**  
SCHEMATIC

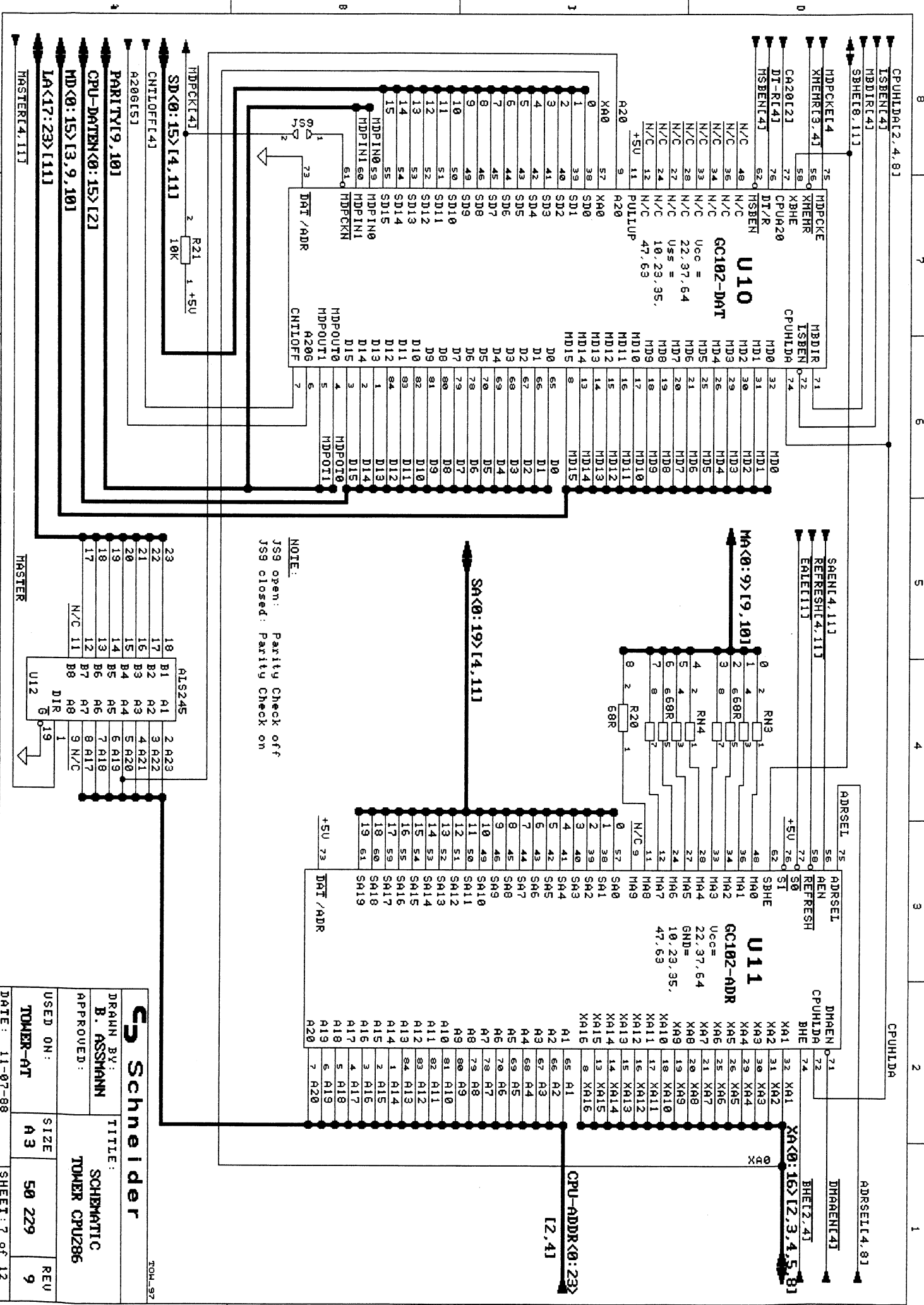
**USED ON:**  
TOWER-AT

**SIZE:**  
A3

**REV:**  
9

**DATE:**  
11-07-98

**SHEET:**  
6 of 12

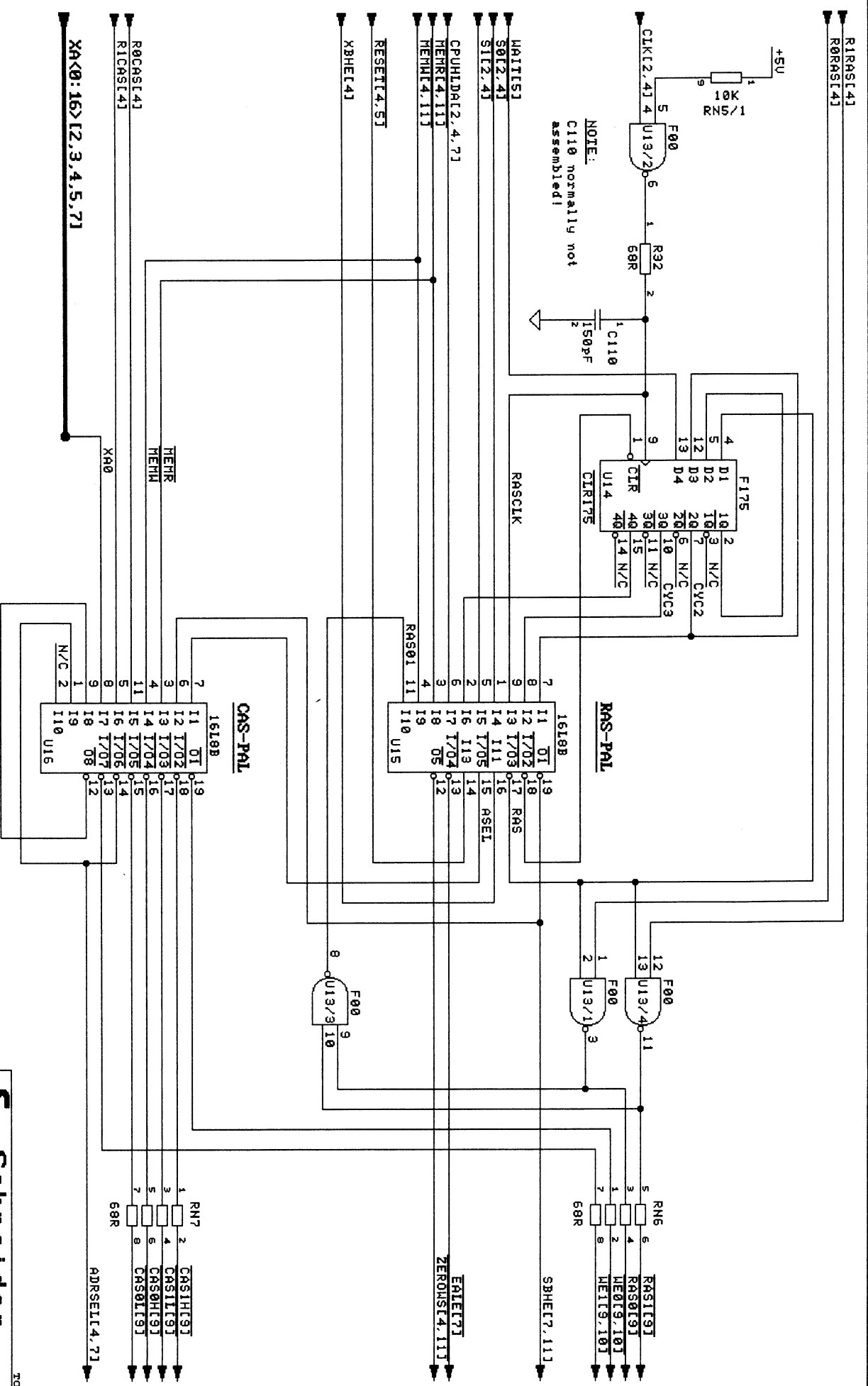


**Schneider**

DRAWN BY: B. ASSMANN  
APPROVED: TUMER CPUS86

USED ON: TUMER-AT  
DATE: 11-07-88

SIZE: A3  
SHEET: 7 of 12



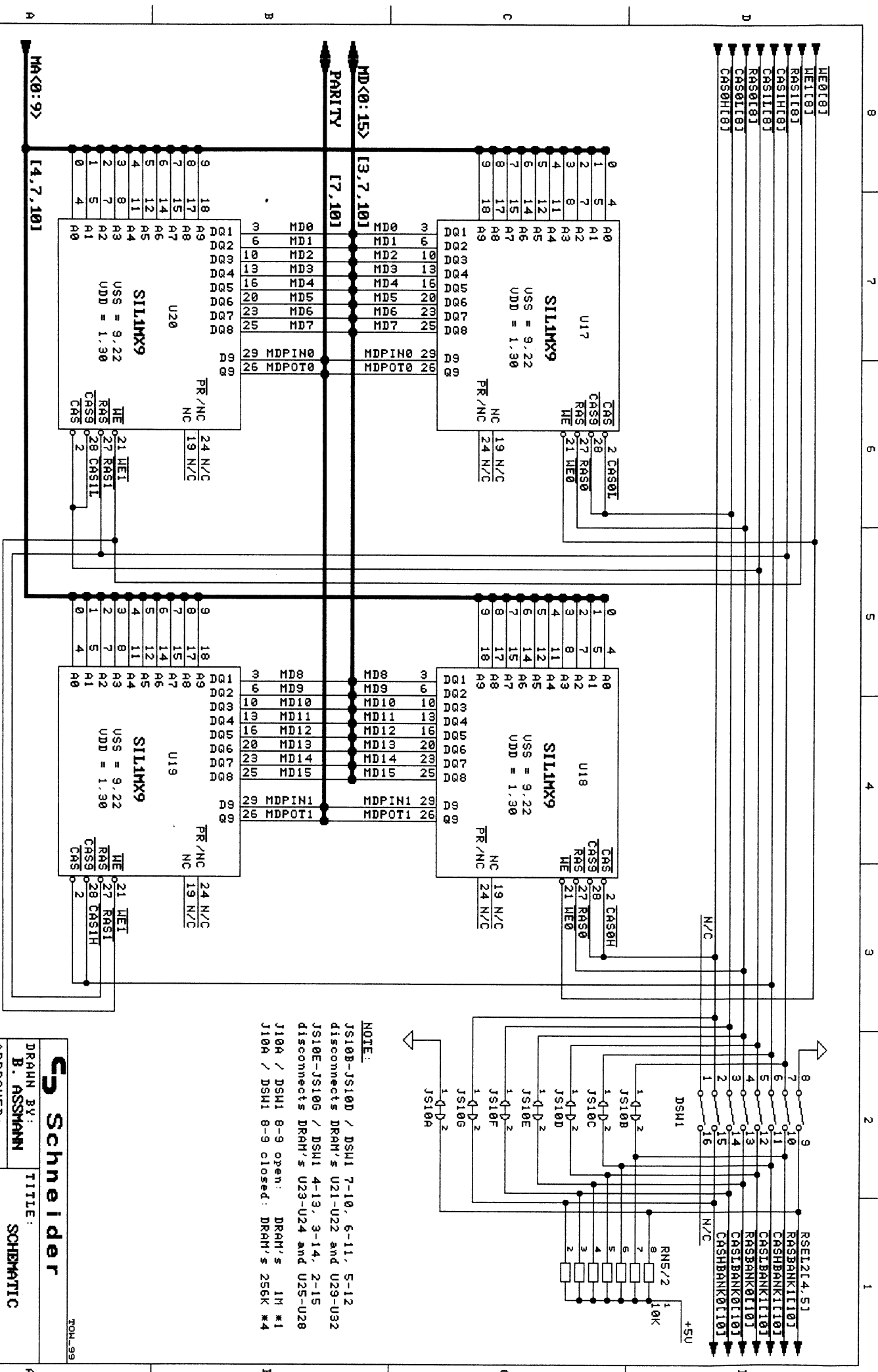
**Schneider**

DRAWN BY: B. ASSMANN  
 TITLE: SCHEMATIC  
 APPROVED: TOWER CPU286

USED ON: SIZE A3  
 TOWER-AT 50 229  
 DATE: 11-07-88 SHEET: 8 of 12

TOM-98





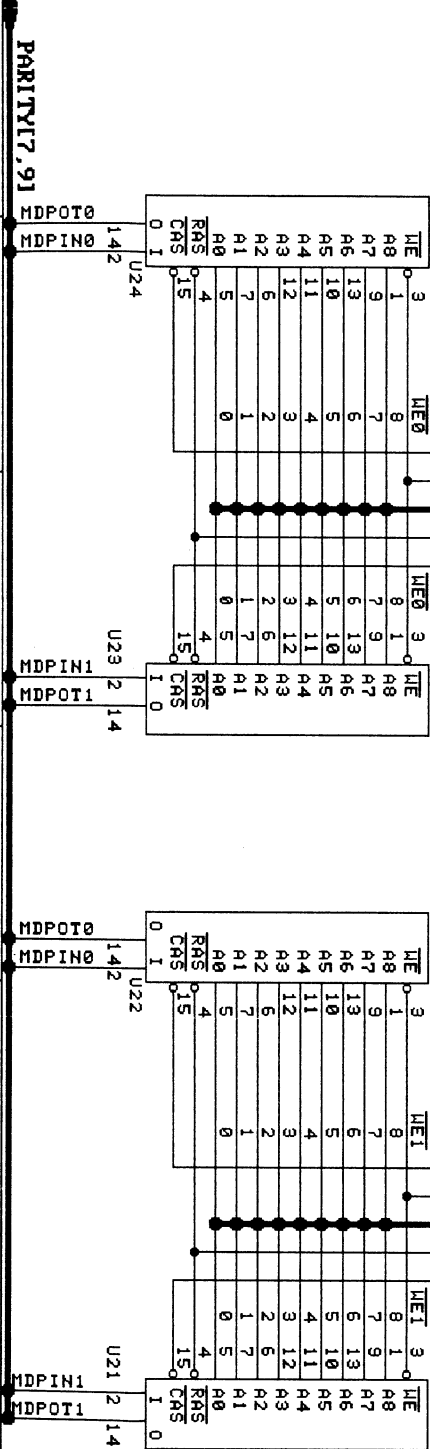
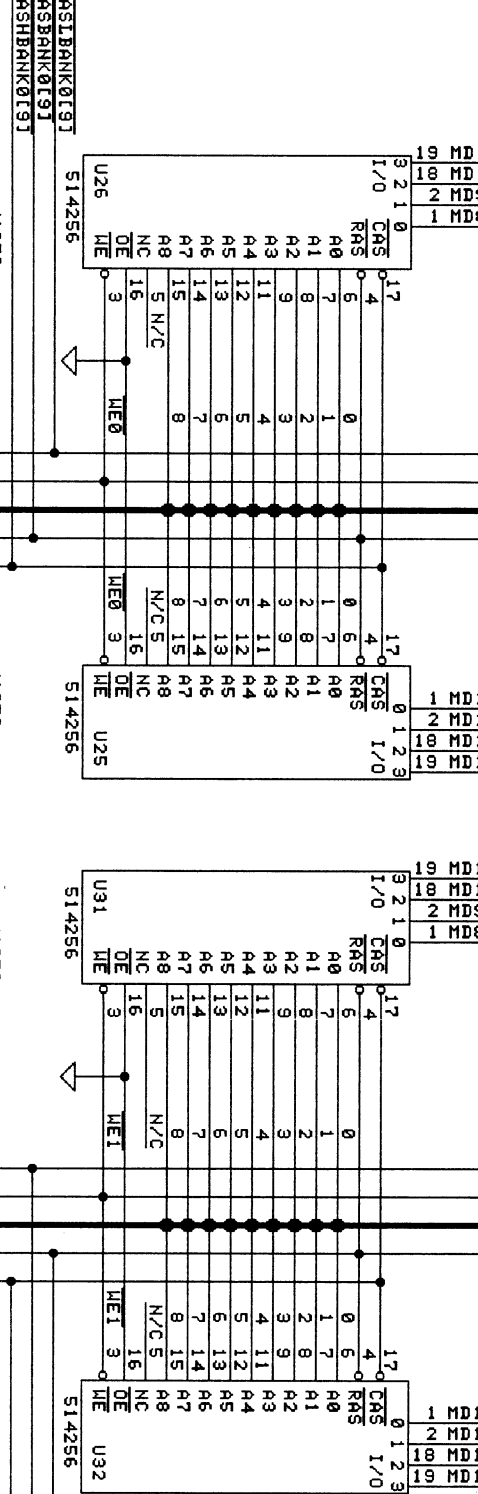
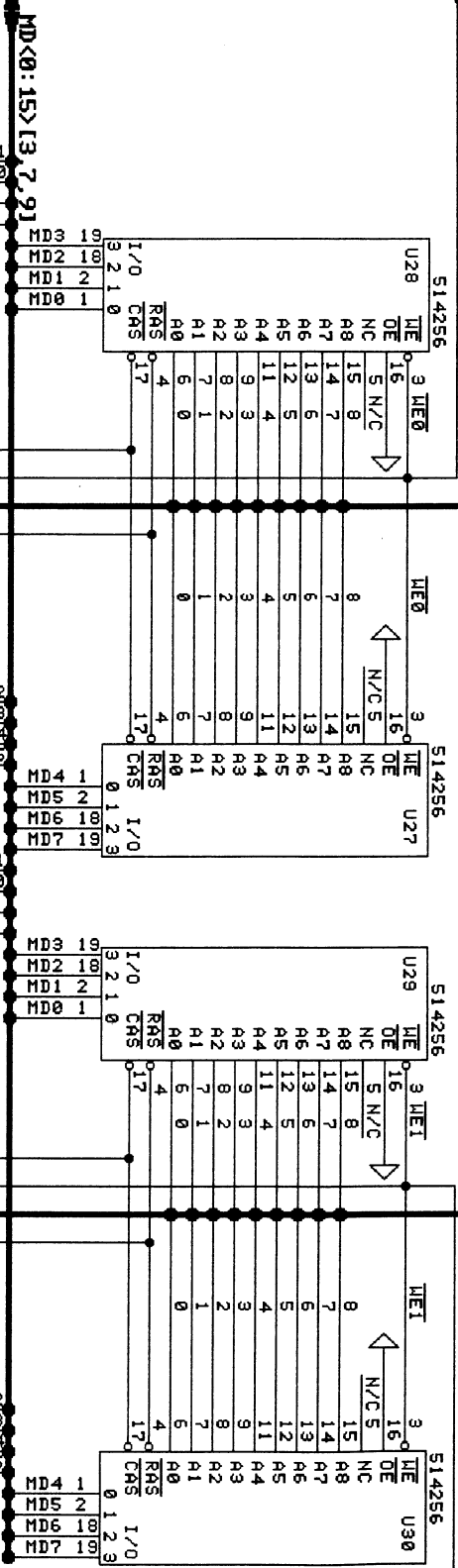
**Schneider**  
 TOWER-AT

DRAWN BY: B. ASSMANN  
 TITLE: SCHEMATIC  
 APPROVED: TOWER CPU286

USED ON: TOWER-AT  
 SIZE: A3  
 REV: 9

DATE: 11-07-88  
 SHEET: 9 of 12

MA<0:9>[7,9]  
ME0[8,9]  
ME1[8,9]



**Schneider**

TOM-910

DRAWN BY: B. ASSMANN

APPROVED:

TITLE: SCHEMATIC

USED ON: TOWER-AT

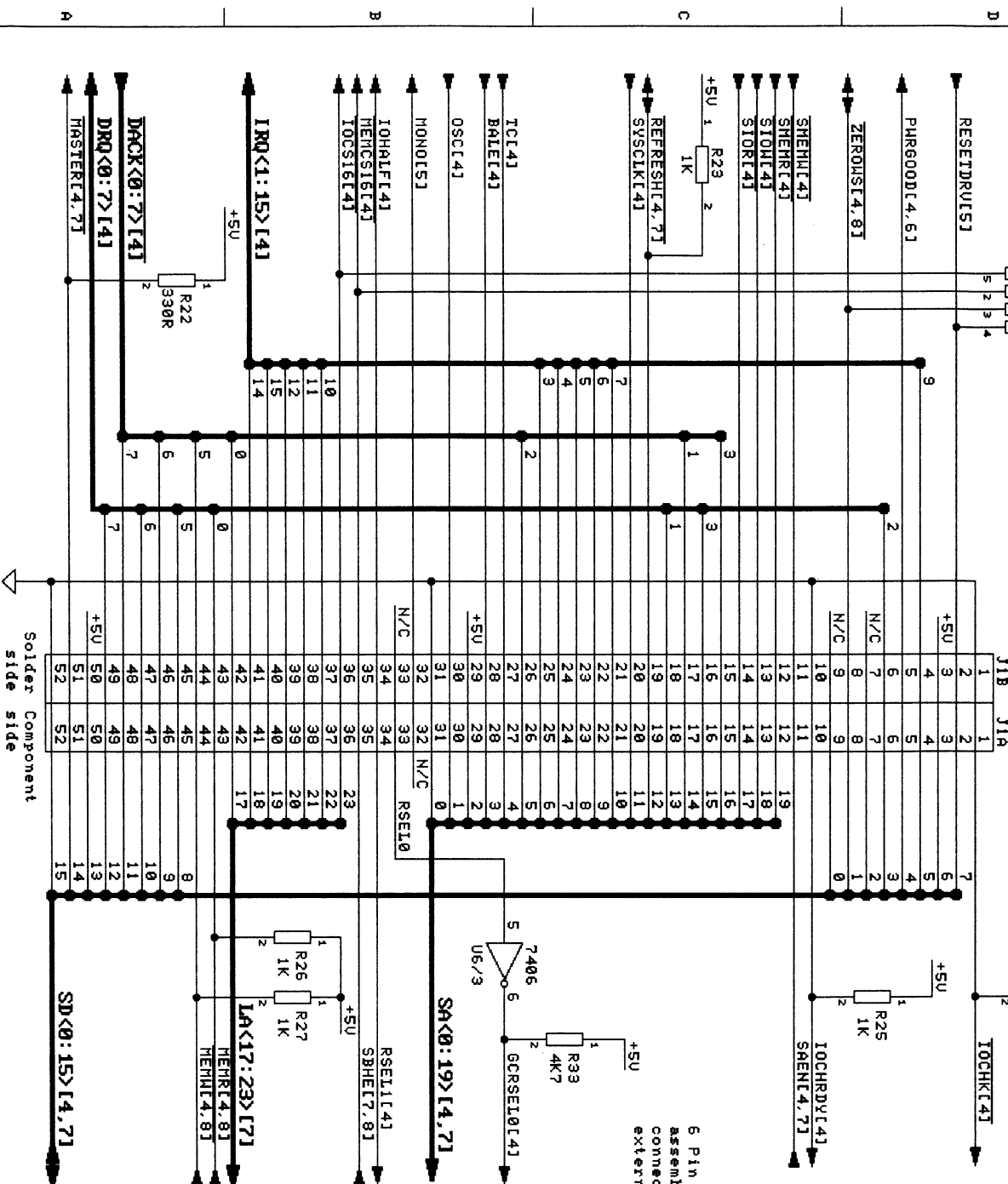
DATE: 11-07-88

SIZE: A3

SHEET: 10 of 12

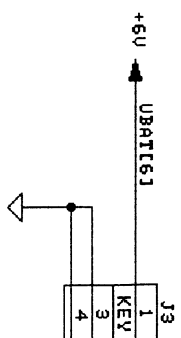
REV: 9

# AT - Bus, 104 Pin Card Edge Connector



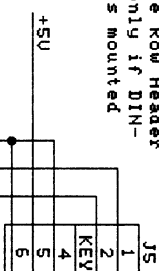
## Battery- Connector +6V

Single Row  
4 Pin Header

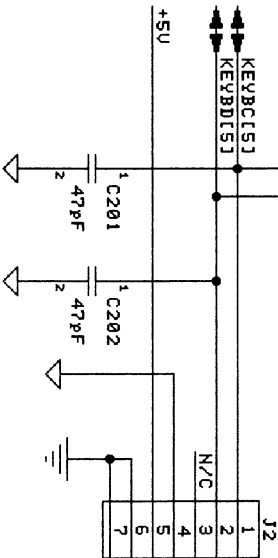


## Keyboard- Connector

6 Pin Single Row Header  
assembled only if DIN-  
connector is mounted  
externally



5 Pin, 180 Degrees  
DIN-Connector, female,  
Pin 6+7 is shield.

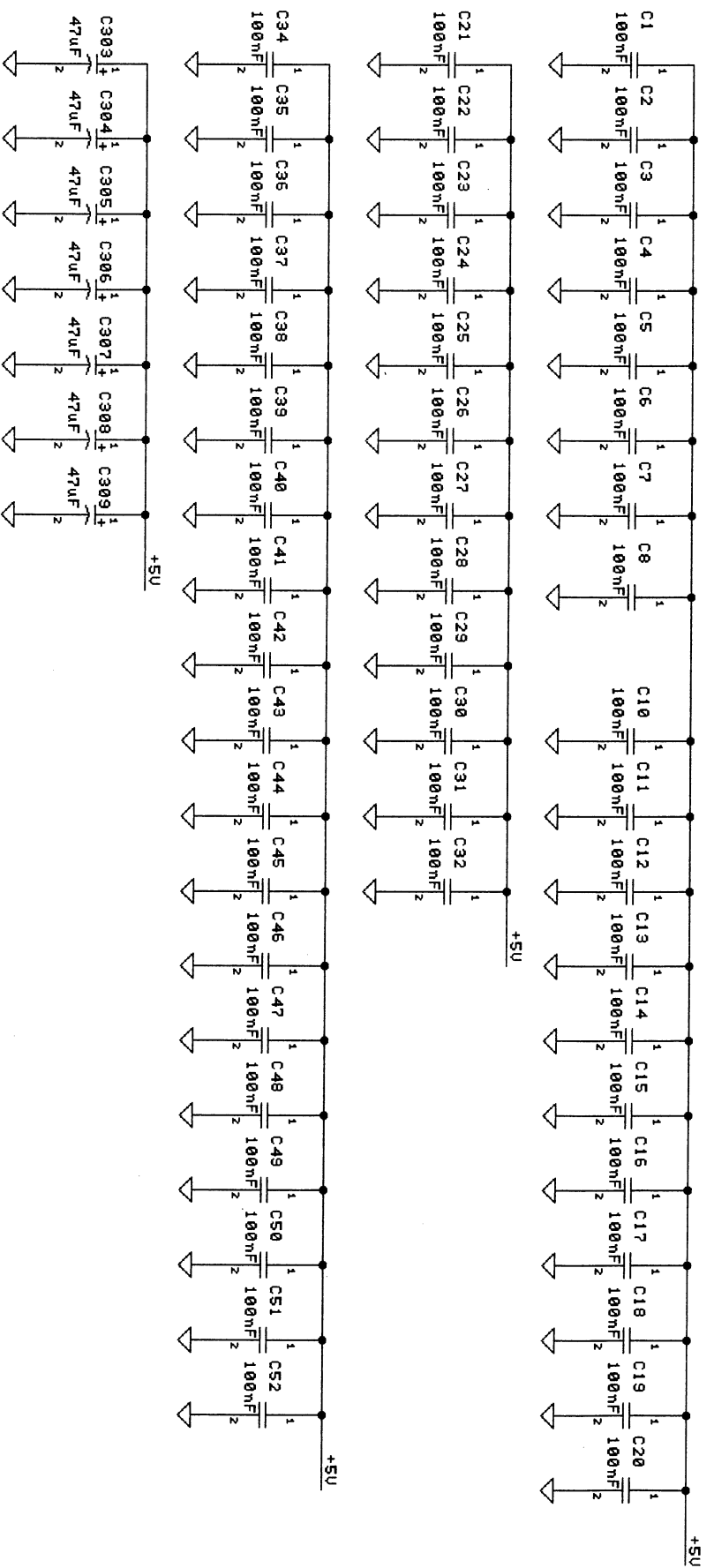


**Schneider**

DRAWN BY: H. ULLMICH  
APPROVED: TOWER CPU286

USED ON: TOWER-AT  
SIZE: A3  
SHEET: 11 of 12

DATE: 11-07-88



**Schneider**

TOM-912

DRAWN BY:

B. ASSMANN

TITLE:

SCHEMATIC  
TOWER CPU286

APPROVED:

USED ON:

TOWER-AT

SIZE

A 3

50 229

REV

9

DATE: 11-07-88

SHEET: 12 of 12

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Bitte bei Ersatzteilbestellung die genaue Bezeichnung und Ident-Nr. (siehe Typenschild) des Gerätes sowie Bestell-Nummer und Positions-Nummer des Ersatzteils angeben.

For ordering of spare parts please state exact description and ident.-no. of unit (see silver rating label on the backside of unit) as well as part no. and position no. of required spare parts.

Benutzen Sie:

Telex: 531516

oder



\* 317298 #

oder

Telefax: 08245/51326